History Information Stations at the Oakland Museum

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The History Information Stations at The Oakland Museum are three, stand-alone, interactive touch-screen computers that combine text, graphics and motion video to provide visitors with an array of information from various points of view about the history exhibition "California: A Place, A People, A Dream." They bring together a combination of needs: the curator's commitment to labels, the collector's curiosity about objects, the multicultural community's need for a voice and recognition, the scholar's concern for historical interpretation, the visitor's desire to understand, and the youth in all of us with a chance to play. They are also the museum's first successful foray into interactive computer media, and our experiences in conceiving and creating them may be helpful to those of you about to make your first trip into computer land or to guide someone else's first trip. After a general system description, we will share our two perspectives on the development of the system from concept to final implementation.

System Description

Introduction

Each History Information Station displays a tailored attract sequence composed of exhibition images and moving video fading in and out of windows on the screen The sequence is silent but displays the message "Touch the Screen to Start." Touching anywhere on the screen brings up a 15 second video introduction presented by the curator of the exhibition, L. Thomas Frye. The first station introduces him as a museum curator whose business is history and who invites visitors to explore the past and join him on a journey through history

on the History Information Stations. On the second station, the curator uses the metaphor of an oral history videotaping scene to point out that ordinary people make history and to encourage visitors seek out and listen to these stories on the History Information Stations. On the third station, the curator is surrounded by school children amazed to find a really high tech skateboard on exhibit in the museum. The curator invites visitors to look around for the evidence of their own history and to let the History Information Stations help them do that.

At the end of the video introduction, the visitor is presented with the Main Menu containing the four program elements. A voice-over introduction explains the four elements and how to choose one by touching the screen. As each element is described, a hand--produced with video graphics--appears on-screen to demonstrate how to touch the screen. Each of the four elements is described below: Open the Curator's File, Meet Californians, Explore Points of View, Solve Mysteries in History.

Open the Curator's File

A primary goal of the History Information Stations was to provide identifying and interpretive information about each of the 6000 artifacts on exhibition. The Curator's File was created to contain one and sometimes two "cards" for each object and image in the exhibition. Visitor access to the Curator's File begins with a voice-over introduction showing a graphic map of the exhibition and explaining how to choose a particular area. The visitor touches the screen to choose a section of the exhibition. The screen then shows a color slide image of each exhibit case, panel or platform in that section. The visitor then touches the screen to choose the exhibit unit of interest. A full screen view of that exhibit then allows the visitor to touch a particular object and open the curator's file. The file appears as computer generated text on a graphic overlay "card" around the margins of which the exhibition is still visible. Touch points, or "buttons," at the bottom of the screen allow the visitor to view "More Information" if a second card exists, to "See Video" if a video segment is linked to the object, to choose "Another Object," to return to the "Previous Screen," or to go back to the "Main Menu." The "More Information" and "See Video" touch-buttons do not appear on the screen unless the object is linked to a second card and/or a video interview. "Previous Screen" and "Main Menu" are always options throughout the entire system.

The Curator's File can be edited by museum staff. As objects are changed in the gallery, or as new information comes to light, the text on the "card" can be updated using our word processor and then loading the new data into the History Information Station computer. Museum staff can also add, move, delete and proof the small red squares that serve as touch-points for selecting specific objects in an exhibit. The images of the exhibition cannot be changed as these are mastered on the videodisc. However, frequently changing objects, such as textiles, have been overlaid with a computer graphic to stylize them and obscure specific details. The text is updated whenever, for example, textiles are rotated.

Meet Californians

A primary goal of the History Information Stations was to highlight the role individuals play in history. We wanted visitors to see ordinary people as a part of history-making. We invited ten Californians whose stories, and in some case whose objects, are reflected in the exhibition to share their experiences with our visitors in videotaped interviews. In segments ranging from 17 seconds to 129 seconds, they relate personal stories that give meaning to objects on exhibit.

Visitor access to Meet Californians begins with a voice-over introduction showing the portraits of Californians with their names and brief titles. The visitor is instructed to touch the person of their choice. The screen then shows a very brief written biography of that person along with their portrait. Using the touch-button "Ask a Question" then allows the visitor to select from two to four questions. Touching a question on the screen leads directly to a video interview segment answering the question. At the end of the interview segment, the visitor is returned to the question screen. The visitor can then touch another question, choose another person, go to the previous screen, or return to the main menu.

Explore Points of View

A primary goal of the History Information Stations was to present differing interpretations of the past. We wanted to suggest to our visitors that an understanding of history is based in historical perspective and interpretation rather than a series of right and wrong answers. There are many ways to look at the past depending on one's point of view. We invited six academic historians to provide interpretive view points relating to the exhibition through videotaped interviews. Although museum staff played a very active role in working with the scholars, it was our intention to present differing points of view. To that end, scholars were given wide latitude in selecting the historical issues they felt were most important and in developing the content.

Visitor access to Explore Points of View begins with a voice-over introduction showing a list of the issues from which the visitor may select. After touching an issue, the visitor is presented with the portraits, including names and brief titles, of two to four scholars who present different points of view on the selected issue. For example, after choosing the issue "Cultures in Conflict on the Rocky Road to Statehood," the viewer is given the option of choosing Dr. J. S. Holliday, a noted expert on the California Gold Rush, speaking on "Gold and the Forty-niner's Transform California," or Prof. Frank R. LaPena, a Wintu artist and scholar, speaking on "Indians Under the Bear Flag," or Dr. Clayborne Carson, historian and editor of the Martin Luther King Papers, speaking on "African Americans on the Road to Freedom." Touching one of these scholars' portraits leads directly to a video interview. At the end of the interview, the portrait screen reappears. Each of these scholars interprets the 1850's in California from a different perspective. Visitors have the option of exploring all three interpretations and drawing their own conclusions in light of what they see in the exhibition and what they always "knew" about the Gold Rush. At the end of each video presentation, visitors can use touch-buttons to select another issue, go back to the previous screen, or return to the main menu.

Solve Mysteries in History

Although not part of the initial concept, computers and games are such a natural pair that Mysteries in History emerged during the development process as a way to capture the imagination of our younger visitors and to encourage exploration of the exhibition.

Visitor access to Solve Mysteries in History begins with a voice over introduction showing three mysteriously wrapped packages. Visitors touch the screen to choose one of the packages. A screen showing their package choice has "The Rules" which explain the scoring system. Then, visitors have four clues, one after the other, to guess what is inside the package. The first and third clues are written; the second and fourth clues are images. For example, in one witnessed instance, a group of adults and children chose a mystery to solve. The first clue was "You can ride it but it goes nowhere fast." The adults immediately guessed the carousel horse on exhibit not far from the computer station. But that is the wrong answer. The next clue is a detailed image of part of the object. The youngsters looked at it, fanned out into the gallery, found the object, and came back reporting that it was some kind of saw. They were right, the answer being a bicycle-powered jigsaw. Delighted laughter ensued, and the next mystery was instantly called up.

Options after guessing the right answer include "More Information" to see the Curator's File card on that object; "See Video" if a video segment is linked to that object; "Where is it?" if you need help finding the object in the gallery; "Another Mystery," "Previous Screen," or "Main Menu."

System Components

There are three stand-alone History Information Stations, each addressing approximately one third of the exhibition: Pre-History to 1848, 1848 to the Turn of the Century, and the Twentieth Century. Each is installed in the appropriate section of the exhibition in a custom designed cabinet that allows the screen to be tilted to various angles for convenient viewing. Overhead signs identify the location of each station and the historical time period it covers.

Each of the three stand-alone History Information Stations is composed of the following hardware:

- Mitsubishi Diamond Scan 19" monitor (HC3905)
- Elographic touch screen (E274)
- Acer 286 PC with 40mb hard drive
- VGA 80 column text overlay board
- Sony videodisc player (LDP-1550)
- Realistic integrated stereo amplifier and speaker

The custom software and system configuration was developed by New England Technology Group, Cambridge, MA.

Independent Producers Services, Inc. of Berkeley, CA, filmed the videotaped interviews totaling 1 hour 27.5 minutes. Ace Design of Sausilito, CA, provided graphic design guidelines for the computer screens to integrate them with the existing graphic vocabulary of the exhibition.

Funding for the system was provided by the S. H. Cowell Foundation, the National Endowment for the Humanities, Mervyns, the Women's Board of The Oakland Museum, the History Guild of The Oakland Museum, and the City of Oakland.

Context - The Oakland Museum

The development of the system is best understood within the context of The Oakland Museum, the "Museum of California," a multi-disciplinary museum presenting a unique view of the California experience from the shared perspectives of art, history and natural sciences. Internationally acclaimed for its innovative architectural design by Kevin Roche, and for its concept as a regional museum, the museum blends three main galleries, temporary exhibition galleries, classrooms and other facilities within a 7.7 acre urban setting of terraced gardens and open courtyards. The City of Oakland, the community that supports The Oakland Museum, is one of the nation's most racially, ethnically, and culturally integrated. The museum's history is based in a strong sense of community involvement, with a tradition of providing programs and services for a diverse multicultural audience.

The Oakland Museum's 28,000 square foot Cowell Hall of California History presents the exhibition "California: A Place, A People, A Dream." Visitors may explore California's rich past from prehistory to the present. Here they can meet the people who have shaped California--natives, adventurers, wealth-seekers, health-seekers, colonists, settlers, newcomers, old-timers, sun-worshippers, reformers, upper class to under class--people of all colors and the dreams they have pursued. Here they can explore the forces that have shaped California--the environment, the Gold Rush, earthquakes, wartime, the computer chip, Hollywood, social and political protest, countercultures, the automobile, discrimination, leisure and the benevolent climate, freedom and opportunity.

The exhibition, designed by Gordon Ashby, was initially installed in 1969 with a new 20th century gallery that opened in 1984, is a combination of wall panels with text and images, enclosed cases, open platforms and period rooms, displaying some 6000 artifacts. The objects are there to tell a story, grouped in thematic assemblages with interpretive text that focuses on the larger issues of California's past rather than the significance of individual objects. A revolutionary concept in 1969, the decision not to label individual objects grew out of the vision of the exhibition as a story-telling place about cultural history, not a place about object classification. The juxtapositions of artifacts, the aesthetic interplay within artifact groupings and the overall power of assembled objects to tell important thematic stories far outweighed the traditional emphasis on isolated understanding of particular objects. In addition to the thematic text, docent tours, a gallery handbook, and special programming provide a variety of interpretive formats for the visitor to use.

The exhibition remains dedicated to the use of assembled objects to tell history, but one frequent request from visitors has been for information about this object or that object. What is it? How or when was it made? How does it work? This interest was not unexpected, and from the beginning, we realized that something would have to be done. We wanted to use this curiosity about individual objects as a catalyst to stimulate interest in history. We wanted to answer these questions so that attention could be expanded beyond the specific. We wanted to credit donors of artifacts as well. The challenge of addressing these needs without blurring the exhibition's focus provided the impetus for development of the interactive History Information Stations in the Cowell Hall.

Since opening the system, we have received many inquiries that use technology rather than content as a starting point. It is important to emphasize that our starting point was not technology, not that we needed to incorporate interactives into the exhibition. We did not ask, "We need an interactive computer. What shall we make the computer do?" Indeed, we first explored how we might provide individual object identifications in printed guides either mounted periodically in the gallery or available at the front desk. Printed guides were in fact produced as docent manuals. We also developed a complete graphic scheme for discrete group labels to be placed throughout the exhibition. After much discussion, we concluded that neither of these would meet our needs and that the number of objects and the amount of information we wanted to convey could best be handled by a computer. Moreover, we felt this solution would have the least negative impact on the exhibition aesthetic.

Concept Devlopment

Having made the "computer" decision, we began to explore how this medium might serve various objectives within our interpretive programs. One of our earliest decisions grew out of two previous, disastrous attempts to develop computer programs in-house with contract programmers. Not wishing to repeat such painful experiences, we decided that museum staff would stick to content issues and that we would seek a firm with extensive experience in developing interactive systems to provide a turnkey system addressing both hardware and software needs. We were absolutely uninterested in the enthusiastic "Oh I can do that" promises from local computer hacks who offered inexpensive but inexperienced solutions. Our staff does not include computer experts; we are historians and anthropologists. Recognizing that fact, and designing the project around our abilities and limitations, was a key element in the success of the project.

So we began to address content issues. The first objective was provision of information about each object and image on exhibition. Freed from the prospect of 6000 tiny printed labels overwhelming both the visitor and the exhibition, we developed an approach to interpreting individual objects that provides both basic identification such as object name, materials, maker, dates, function and so forth, as well as contextual, anecdotal, and interpretive information to direct the visitor's attention beyond the object as object. For example, the Wooton desk on view intrigues visitors as a complex example of Victorian furniture loaded with pigeonholes, drawers, cubbies, and moving parts, but it is also an introduction

to the massive changes in information handling that were the result of developing transportation networks and mass production capabilities emerging in the mid-19th century. The computer's ability to invisibly handle large amounts of text, such as that required to explain about the Wooton desk, allowed us to go beyond the constraints of typical museum labels and to utilize a wide range of information types and sources to add new dimensions to the educational possibilities of the exhibition.

Two additional objectives grew out of the fact that since we would be using a computer with a videodisc, we should take full advantage of its capabilities. One of the major interpretive goals of the exhibition is to encourage visitors to see ordinary people like themselves as part of history-making. We have often invited Californians to share their experiences as part of public programs offered periodically in the exhibition. The computer offered us a way to make these stories and experiences available on a continuing basis. Videotaped interviews with Californians whose stories and, in some cases, objects are included in the exhibition would allow us to bring very personal perspectives to bear on the understanding of history. For example, Chizu Iiyama was a college student when she and her family were sent to a World War II internment camp. Her story on videodisc adds a powerful component to the exhibited artifacts and interpretive text in the gallery. Julian Lang, a Kaork Indian, can explain the significance of the "Big Guy," otherwise known as the pileated woodpecker, whose red head feathers figure so prominently in the development of artistry and wealth among the Indians along the Klamath River. His presence alone helps to dispel the myth that Indian culture is a thing of the past. Joe Bailon, caressing the candy apple red custom car he created, can tell first hand stories about car culture in California and why, after all, anyone would want to have a custom car. Although the typical visitor would not gain a sense of the whole system during a given interactive session, we were concerned that the system include a representative balance of experiences reflecting a range of racial and ethnic backgrounds, cultural points of view, innovative and mainstream lifestyles, and everyday and historically significant experiences. We wanted our very diverse audience to find themselves here as a part of the museum. Museum staff did, of course, choose the people to be interviewed but beyond that informants were encouraged to choose how to tell their stories and what was important to say. And in the final editing of the hours of rough videotape, we were guided by a respect for their opinions and their sense of importance. These first hand perspectives, presented in the context of a museum exhibition, elevate personal experience and encourage people to see their own lives as part of the history of the future. They also give an immediacy to the exhibition that cannot be achieved through objects and text alone.

A second objective growing out of the potential presence of a videodisc was an opportunity to explore recent historical scholarship and differing interpretations of California history. The exhibition itself adopts a middle ground to provide an overview of a large and complex story stretching from pre-history to the present. Of necessity, it leaves untold many particular stories and points of view. We invited two academic historians to assist us in developing a means to incorporate historical scholarship that had been undertaken since the initial installation of the exhibition in 1969. What grew out of these discussions was a recognition of the need to include historical debate. Their experience in teaching history to college students suggested that we should contrast differing interpretations to remind visitors that "History" is not a cut and dried answer but rather a selection of facts used in

presenting a point of view. We hope to encourage visitors to use critical thinking by presenting various views of the same subject, and even questioning the implications of the exhibition itself. For example, using videotaped interviews, Dr. Ruth Cowan takes issue with the Victorian exhibit replete with fancy furnishings, chandeliers, and silk gowns. She notes that something is missing from this exhibition and goes on to describe the servants necessary to support this lifestyle. In another example, Dr. Jim Holliday addresses the 1850s Gold Rush from the Yankee viewpoint of its opportunity for wealth; Frank La Pena presents the Indian viewpoint of the Gold Rush as genocidal and cultural disaster; and Dr. Clay Carson looks at 1850s California as an opportunity for African Americans to seek life and opportunity outside of slavery. In developing these interviews, we were committed to incorporating other points of view in the exhibition, and to that end, the scholars were given wide latitude to define the issues they wished to address. The ground rules were that the topics had to relate to the exhibition in some way and that the medium required short statements, not 50 minute lectures. Beyond that, we worked closely with the scholars in developing outlines and shoot sites for their presentations but definition of content and point of view was up to them. Their views are presented in the context of the exhibition not as answers but as issues to inspire questions about what people see in the exhibit and what they have always "known" about history.

The development of the content was largely dependent on our intuitive and experienced concept of what a successful museum exhibition should address. Technology was a helper in achieving these goals, not the driving force. Our assumption--a very generalized one--was that technology would be able to meet our content objectives. And our decision was that computerized bells and whistles beyond our defined content objectives were not of much interest. Although we visited model interactive computer installations throughout the country, from the Getty Museum to Epcot to the AAM vendors' hall and places inbetween, we did not develop a prototype nor did we do a formative evaluation regarding the use of technology as a medium. We did apply the same criteria to the content development for the computer system that we would apply to the development of an exhibition storyline. We found useful similarities in the need for a compelling people-oriented story, for content based on a solid foundation of research and interpretation, and, in the end, for a design that complemented the content. I do not suggest that this is the only, or even the best, approach. However, jumping into the design phase before dealing with the compelling content or the research and interpretation does not work well for either exhibitions or interactive computers.

The concept described above was incorporated in our request for proposal which we distributed to firms which we knew had implemented successful interactive programs at other museums. New England Technology Group, whom we selected to work with us on this project, responded to our request with a very specific proposal that suggested to us that they understood the concept and that they could develop appropriate solutions for successfully blending concept and technology. Their response also included a very clear, easy to understand budget which was essential to our development of funding proposals and, in essence, allowed us to proceed.

Concept Implementation - The Museum Perspective (Deborah Cooper)

As everyone knows, concepts are one thing, and implementing concepts are quite another. In order to implement this concept, we had to raise approximately $300,000. We are extremely grateful to the S. H. Cowell Foundation, the National Endowment for the Humanities, Mervyns, The Oakland Museum's Women's Board, and the History Guild of The Oakland Museum for their very generous support.

With funds in hand by September 1989, we began intensive discussions with New England Technology Group regarding the blending of concept and technology. From the museum's point of view, this was to be a team project. We had made a substantial commitment to an interpretive concept that could not be implemented without an experienced partner. NETG brought an essential ingredient in their ability to visual how all this might work. One expression of their vision was the flow chart they produced which we used in every conceivable fashion from staff education to PR to final fund raising. Those of you used to developing interactive systems may take such tools as flow charts for granted. However, please recognize that for at least some of your clients, they are major revelations. When Steve Gregory began to draw the flow chart up on big pages at our first meeting, the proverbial lightbulb was lit as we began to see how to think about the concept in terms of the technological possibilities. The collaboration established early in this project was based, I think, in a balance between passionate commitment to content and consummate skill in shaping, and explaining, that content around successful technological reality.

I said earlier that we were uninterested in bells and whistles. Actually, one bell and whistle did grow out of our early discussion with NETG. If there were going to be computers, there should also be a game. Mysteries in History, a guessing game about objects in the exhibition, evolved out of brainstorms, a good deal of laughter, meetings with cookies and mead, and clues and ideas from a very wide range of sources.

Development of the game was actually fun although, like most of this project, it turned out to be rather more work than anticipated when we said, "Yes, lets do it." A few facts and figures may help those of you about to specify the resources you will need to accomplish an interactive project. My first word of advice is, "Don't underestimate." This is a very exciting medium; ideas and visions grow during implementation in the most compelling fashion.

The development of the curator's file was based on an already completed inventory with accession numbers of the 6000 objects in the exhibition, including the several hundred reproduced photographs mounted on panels. The already completed docent manuals also contained a list with interpretive information about all the exhibited objects and images as well as a detailed drawing of each exhibit unit with each object numbered and keyed to the list. In anticipation of the project, we had also already hired a professional photographer to produce one, and sometimes more, color slides of each exhibit unit. Even given this foundation, it took four people nine months full time, and then some, to research and write over 6000 "curator's cards." The format was defined by NETG to mesh with a successful computer presentation: 20 lines 66 characters long per card maximum, and that included a donor credit line. There was typically one card per object, but many objects also linked to a second card of more generalized, interpretive information. The curator's

cards were not to resemble computer database information, or even typical museum labels, but were to be engaging presentations of wide ranging information written specifically for this purpose. This was a major undertaking, and since we had budgeted three people for eight months, the additional person and month relied on additional funding and a very significant input, unplanned, of regular staff time.

Production of the videotaped interviews with both the first person Californians and the scholars was awarded to a local film production company based on an RFP we submitted to several firms after we had already raised the funds to produce the video. Hence we were looking for a firm which could work within our fairly arbitrary budget and still be committed to excellence. Since museum audiences are also experienced video-viewers, we were concerned that the production values be very high. Independent Producers Inc. brought their bid within our budget and demonstrated a clear understanding of what we hoped to achieve. However, we both underestimated the amount of work to be performed. Intensive preparatory interviews with the first person informants and even more extensive meetings with the scholars led to six, not the budgeted four, days of shooting all of which occurred in our gallery to establish direct links between the interviews and the exhibition. There were hours of editing too scary to calculate that turned 24 hours of raw footage into 86 rather than the planned 60 minutes of finished video. Overtime on the part of museum staff was largely volunteer but overtime on the part of the video crew required that we raise an additional $13,000 over our original budget of $44,000.

Per our contract with NETG, the museum was required to submit the completed curator's cards as word processing files on floppies, the finished video as a 1" master and 3/4" time coded version, the color slides of the exhibit units, and the final clues and images for the game by May 1. We didn't actually get this all done until sometime in July. So in addition to advising you not to underestimate resources, I would suggest that a flexible opening date is a very handy saving grace to cover underestimates of time.

One final piece of the production was the graphic design for the screens. I have indicated a certain apprehension on our part regarding the use of computers in our gallery: we began by looking for a label system that would have the least negative impact. We wanted the computers to fit into the exhibition seamlessly. To that end, we hired Ace Design, a firm that had worked with the original exhibition designer, to develop guidelines for the graphic design of the computer screens so they would harmonize in color, type face and overall graphic vocabulary with the gallery graphics. Implementation of this process required an infinite amount of patience and dedication to client concerns on NETG's part. It involved the shipment of videocasettes too numerous to count for the review of developing screen designs and long conversations about difficult-to-descibe visual components. It took more time and resources than either of us had estimated. But the end result was that the computers seem an original part of the exhibition rather than an afterthought.

The graphic elements were the final piece of production from the museum's point of view. However, we were mercifully insulated from the production aspects that NETG undertook to produce the finished system.

Concept Implementation - The Producer's Perspective (Jim Oker)

As a member of the company hired by The Oakland Museum to produce the History Information Stations, I can provide a somewhat different point of view on the project, and I of course have a different bias. I see many projects happen each year, and though I try to keep in contact with our past customers, I do not continue to live with the projects. Our ending is just the beginning for our clients. My perspective, however, allows me to discuss issues of general relevance to many other projects.

When I discussed what I would write with Deborah, she thought it would be interesting to other museums to hear how we decided to respond to the museum's RFP. As we put costly hours into responding to RFP's, we must somehow decide which to respond to and which to let by. When we work on exhibits, we strive to archive the goals of our clients, and Oakland had a clear sense of goals which were rather well expressed in their RFP. From my first reading of the RFP, I felt that they had enough momentum to carry the project to completion. Their RFP showed a significant investment of time, and it descried details which indicated clear and thorough thought. Yet they left room for our input. We were able to reply with a responsive and specific proposal. Though the shape of the project was to change and change again as we grappled with further levels of detail, the RFP and our response established a core of ideas and goals which carried through to finished product. Our proposal verified and expanded upon their groundwork, giving both Oakland and funding sources like the National Endowment for the Humanities the confidence to carry out the project.

Once the museum had settled on interactive computer stations, they clearly needed a firm such as NETG. On many projects, our clients want to delegate as much responsibility to us as possible, wanting only to see our work for approval, asking only for changes when we have made factual errors, or interpreted content in a way which runs counter to the viewpoint of their museum. From very early on, we could see that the museum wanted to be involved at each decision point, to be educated to a level at which they could make informed decisions. By insisting on this involvement throughout, they have created an exhibit which fits the Cowell Hall of California History like the last piece in a puzzle.

Though we could have provided the original video production, and have done well with this sort of documentary work in the past, the shooting was to take place on many days scattered through three months of time. We would have had to fly to California perhaps five or six different times, while Independent Producers Services is located close to the museum, and could more cost effectively conform to the schedule of the various people brought in for filming. They had, moreover, solid experience with shooting oral histories of Californians, and had therefore shown an ability to handle the very topics of interest to the museum.

As we began to hash out the details of graphic design with the museum, it became obvious that given their desire to be involved with the finest details of the project, that creat-

ing a design that would mirror the look and feel of their gallery was going to involve many iterations, and face to face contact would allow a much quicker completion of the design. Therefore a local designer who had designed for computer screens in the past seemed like the most practical way to design the graphic templates which we would then follow.

The Oakland Museum's History Information Station project blends the talents of four separate organizations.

The Oakland Museum knows their exhibit area. They have spent a lot of time developing a complete history of California as shown by their collection of artifacts. By watching and listening to their public they knew what would make their hall feel complete. As each small decision needed to be made during the project they were guided by their intuitive feeling for their visitors.

In our role as interactive media producer, we brought the technical ability to execute the project combined with interactive media design skills. We listened to the Oakland staff and interpreted their requests into a usable interface as well as a solid computer program.

The graphic design firm, located in Sausilito, has created graphic templates for interactive screens in the past. We provided them with functional screen designs which they altered to match the exhibit hall through choice of color, font, and layout. We in turn took their templates and interpreted them into practical computer screens. It is often difficult to match the typesetting or color on a computer screen to a paper layout. We varied from the templates where necessary in order to avoid colors that bleed in video as well as to fit lengthy text on the screen in a readable fashion. As each of these changes were made, the museum was consulted for input and approval.

The original video producer nearly took up residence in the gallery. They spent several hours with each personality who appears in the program. They made their subjects feel comfortable on camera, then coaxed them into telling their own stories in ways that helped pull together the broader context that the museum had been looking for. After filming, the producers sorted and culled their 24 hours of material in order to edit down into 86 minutes comprised of 64 separate video segments which conformed to our design specifications. The producers worked very closely with the museum during this stage, as only the museum could choose which interesting pieces would fit into the limited space on the three videodiscs. We worked with the original producers to ensure that their work would integrate properly into the whole program.

The map view of each gallery demonstrates the teamwork in action. We considered many alternatives to allow visitors to telescope in on single artifacts (out of a pool of 6000). After having toured the exhibit halls, we decided that starting with a map view of each section of the gallery would be the most practical starting point. From there, visitors would select smaller areas or groups of display cases, then individual display cases, then individual artifacts. We suggested that the museum, in conjunction with the designer, select one landmark object or image for each area to give visitors strong visual clues to help them to

decipher the floor plan. These icons, placed in shaded regions, would be the touch targets for each sub-area. Because these landmark icons were each going to be very small, and because at this size the computer screen would not convey fine detail, we suggested that they look only for very simple and graphically bold items. Together the designer and the museum sifted through each area, coming up with candidates which they sent to us pasted up onto layouts that the designer had created for each of the three map screens. Once we had the images on the paintbox, we identified several which were not readable when translated to video. We all went through a few more iterations of this work until we had three video floor plans which the museum felt would allow visitors to quickly identify each area of the galleries.

During the execution of this project, each member of the team could have certainly performed some of the functions which other members provided. Each member, however, respected the unique province of the others, and gave way when necessary. I feel certain that we each disagreed with others on certain fine details which are now in the final program, but by sensing when to press a point and when to yield, I feel that we created an exhibit which reflects a wide range of skills and experience.

As we neared the project's completion, I was flabbergasted by Deborah Cooper's stamina in dealing with each of many easy to let slide details. Many people were involved in the project at both NETG and the Oakland Museum. Our staff doesn't enjoy seemingly endless repetitive detail, and this project offered much of it. As the main point of contact with the museum, there were days when the programming crew cringed as I came through the door, knowing that I had a new list of issues from my latest discussion with Deborah. I felt that we needed to carefully sift through all the museum's expectations in order to ensure that the finished exhibit would have a fair chance at working.

In some ways, I "championed" the project at NETG, much as I believe that Deborah championed the project at the museum. We both felt that the project could work, that at it's core it was a good and viable idea. We had both invested creative energy even before the project had been funded. Because the museum had carefully thought through their goals and expectations, their suggestions bore an authority that those of some other clients have lacked. By striving to share the essence of the museum's concerns with the programmers, we were able to close a feedback loop between our two organizations.

How We Selected the System Configuration

The exhibit draws upon two fundamentally different sources of information: motion video which is stored on a videodisc, and lengthy text which is stored on a hard disc drive. Motion video, as seen in nearly every American home, is called NTSC. NTSC is a compromise of features which displays color moving video in a very acceptable fashion. However, fine details are lost on an NTSC monitor. The text we are used to seeing on a television is very large, and therefore looks quite clear. The Oakland project, however, re-

quired the display of much smaller text in order to avoid forcing visitors to flip through endless screens in their pursuit of details of each artifact. The museum wanted to display a standard screen of information which would answer many basic questions, followed by a second screen when there was a special story to tell about an artifact. In order to display their text information clearly, we could not use an NTSC monitor, but wanted instead to use a color computer monitor which can clearly display the type of text seen in word processing programs. We chose to use the VGA standard video display, as there are some computer graphics cards on the market which will take in NTSC signal, turn it into a VGA signal and combine it with very crisp text for display on a VGA monitor.

We chose to use a 286 class computer because it has just enough speed to load the full pages of text at an acceptable rate. A slower computer would have frustrated visitors, while a faster one would have wasted the museum's money. (The optimal choice of computer varies from application to application. Computer graphics, as opposed to graphics which are stored on a videodisc, tends to call for faster computers)

Because the museum intends to continue to update the text information stored for each artifact, we first considered networking the three stations in order to keep one master database. Due, however, to the cost of running network cable in the exhibit hall, we chose to set up three independent stations, each of which would house its own unique database. We traded the cost of two extra hard disk drives against the cost of three network interface cards and the cost of running network cable. Another benefit of the independence of the stations is that if one station has troubles, the other two won't be effected by them.

We chose a videodisc player which we had found to be reliable in the past. Where possible, we created the menuing graphics in the video studio on a Quantel paintbox. The paintbox offers better color resolution and paint effects than the computer graphics board in the system. Moreover, complex images stored on a videodisc can be loaded in a fraction of the time required by computer graphics.

We also created a plain videodisc backdrop for the screens of computer text and graphics. When we used computer graphics overlay for part of a screen (a text screen, for instance) we used the computer graphics for the entire screen. We felt that it was important to maintain a consistent look and feel within individual screens. We did, of course, strive to match the common elements seen in both computer graphics and videodisc (such as the control bar which appears at the bottom of all menu screens offering such choices as "previous screen" and "main menu"). We felt that it was very important that once a visitor had learned how to use a particular control, they should find its look and use to be consistent throughout the program.

The Interactive Program Design Process

When we began to work on the History Information Stations, we needed to work out the design of the program before starting any production activity. We had a sense of the information the museum wanted visitors to access. We had a sense of the museum's aesthetic

criteria. And we had an overriding design philosophy developed over many past projects, as well as through studying the use of our own work and the work of others. While it would take a book to even attempt to lay out an interactive design philosophy, or even to suggest a "how-to" approach, I can at least offer a sense of our process and the tools we used to communicate our ideas to the museum.

As clients describe their goals to us we begin to imagine in our minds the various designs which might be appropriate. The early steps are perhaps best described as brainstorming. We make use of what we have seen or done in the past. We also try to come up with something new by deriving our design from the requirements of the task at hand. As ideas arise we develop them until we are either satisfied that they are solid or have found an unresolvable flaw.

As we work out ideas we create very rough flowcharts which help to visualize each approach. They are as quick and temporary as sketches drawn on napkins (often they are drawn on napkins). Flowcharts are one of the most fundamental communication tools of our craft. A good flowchart will quickly give even an untrained viewer a sense of what sort of choices the visitor will have when using a program. When paired with a written treatment of each flowchart element, the flowchart becomes the "blueprint" for an interactive project. The flowchart which we finally settled on is included here as a diagram. Note that it shows the logical flow of the program, though it doesn't describe each and every pathway which was included in the final project. This level of detail was adequate to communicate our ideas to the museum. The details were filled in much later as we looked at the film footage, the photos of display cases, and so forth.

For the HIS project, we first attacked the problem of how to let visitors select from about 6000 objects. Perhaps the most challenging aspect of this part of the design was figuring out how to judiciously use the limited resolution of video images in order to allow visitors to select from a large amount of information. We assumed that though visitors would have strong motivation (we were creating this part of the program for the visitor who has a question regarding an artifact, thus showing motivation), they would nevertheless get quickly frustrated with a cumbersome interface. Some ideas which popped up during early brainstorming include: taking visitors on a motion video tour through the gallery during which they could touch display cases to select them -- too expensive, too time consuming to sit through the tour; allowing visitors to sift through views of the gallery, moving from wide angles into specific cases--too difficult for most visitors to grasp the wide angle views, too much time spent sifting; asking the museum to put numbers by each item so that we could ask visitors to type in the number--simple for us but horrible for both the visitors and the museum; and allowing visitors to step through the display cases one by one--again, quite unwieldy for the visitors.

One of our earliest ideas remained a clear favorite -- to first offer a map with landmark icons to help visitors select the area in which they found the item in question. Once they select the area, we could then show a montage of display cases at a large enough size to allow visitors to distinguish between the cases. They would next select the case, then finally the artifact in question (though in many cases the visitor may have to either flip through a

few views to find a particular object or select an artifact rich area for a further blow-up). We liked this design for a few reasons. Visitors seem in general to be able to understand well designed graphic floor maps of galleries (if we were wrong in that assumption, most museums in the country have got even greater orientation problems than I have heard about). A lot of information is conveyed in one map. The map allows the visitor to filter out most of the gallery from the decision making process with one touch of the finger. Once the choices have been so filtered down it is relatively easy to select between cases and then items in a case. Visitors can reach the information screen in three touches for most artifacts. Given such a quick way to access one of thousands of items, even if visitors make a few wrong choices along the way, they could back out and try again without getting too frustrated to continue.

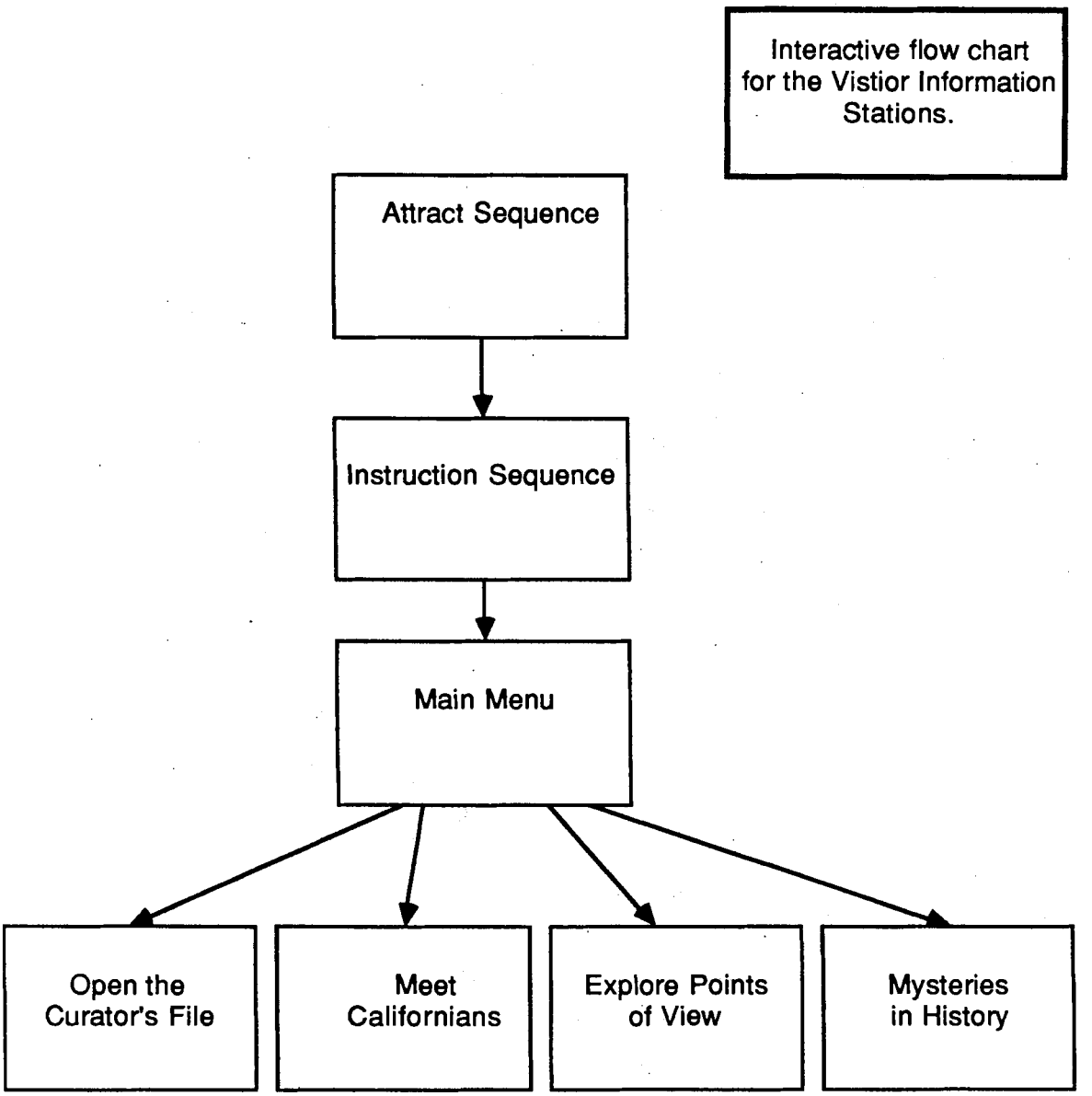
With the problem of selecting artifacts settled, we worked out the way of getting from artifact screens to video segments, as shown in the flowchart. This aspect of the design seemed quite obvious given the desire of the museum to allow visitors to see video segments which were relevant to certain artifacts.

We felt quite certain that many visitors wouldn't care to explore the artifacts at length, and therefore might not see the very interesting video material which some artifacts lead to. The video would probably be of interest to a higher percentage of the museums visitors than would be the artifact text information. We suggested to the museum that the program provide an alternative way to access the video segments. Given that the segments were filmed of "Californians" and "Scholars", these seemed like natural ways of giving visitors choices of what to see. These were made choices from the top-level menu along with looking at individual artifacts (the "Curator's File"). Following further discussion with the museum, we settled upon the sub-choices within each of these sections as shown in the flowchart.

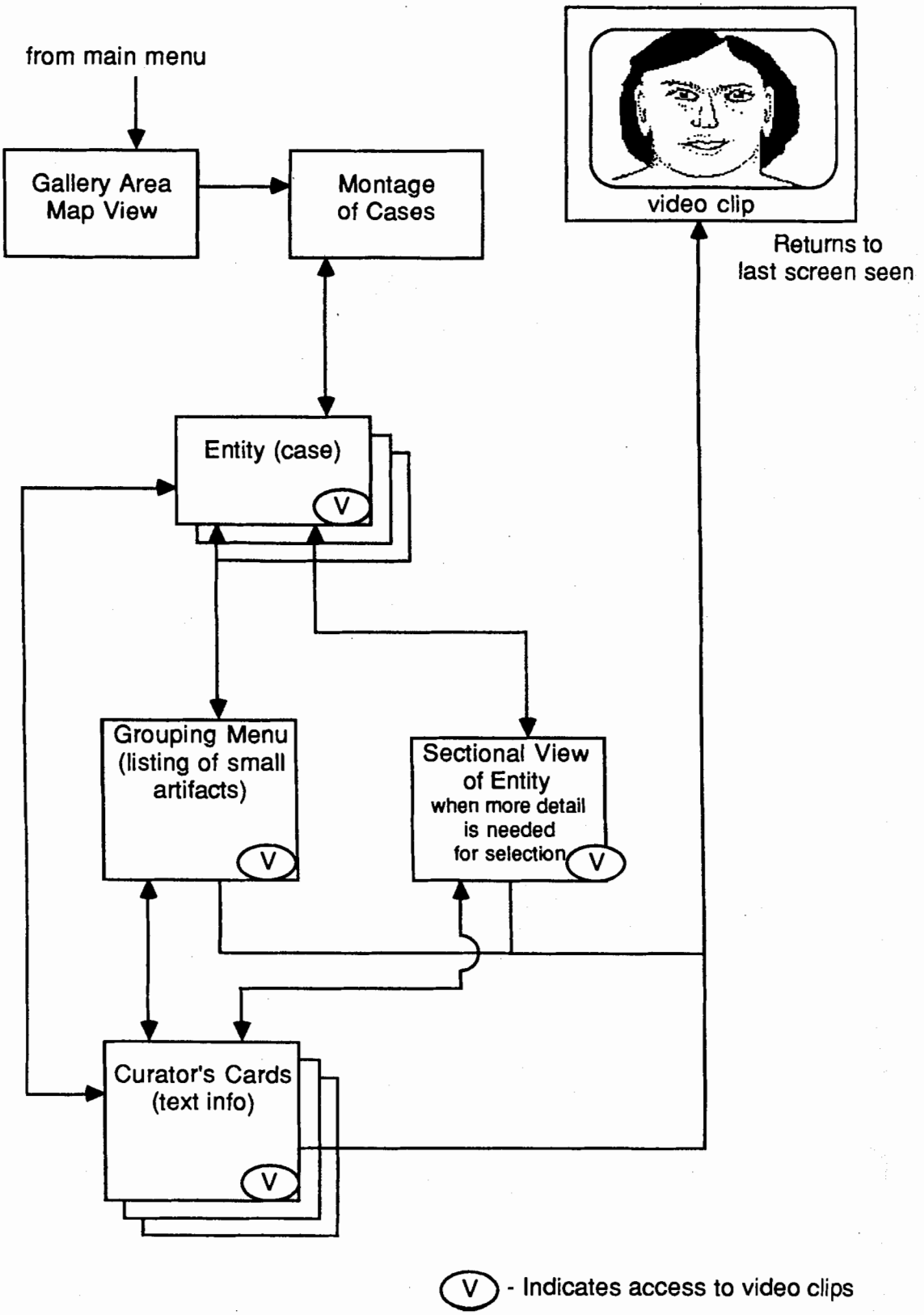
The museum also felt that given that they were using a computer system to solve their problem, they should do something to satisfy their visitors' expectation that computers provide games. The game element, however, should do something to put the visitors in a relationship with the artifacts. The museum first suggested hiding an artifact behind a layer, and allowing visitors to scratch off the layer until they could guess what artifact was being displayed. For reasons of budget, we suggested a somewhat simpler approach from a programming standpoint. We worked with the museum in meetings to finally arrive at "Mysteries in History" which presents a sequence of clues which challenge visitors to guess with as few hints as possible. Once they find out what the artifact is they can opt to see the location of the item highlighted on a floor plan as well as to see the text information stored for the item. By bringing this information into the game, visitors are encouraged to go back out into the gallery with an observant attitude. While the game is fun, it involves visitors with the exhibition rather than distracting them from it.

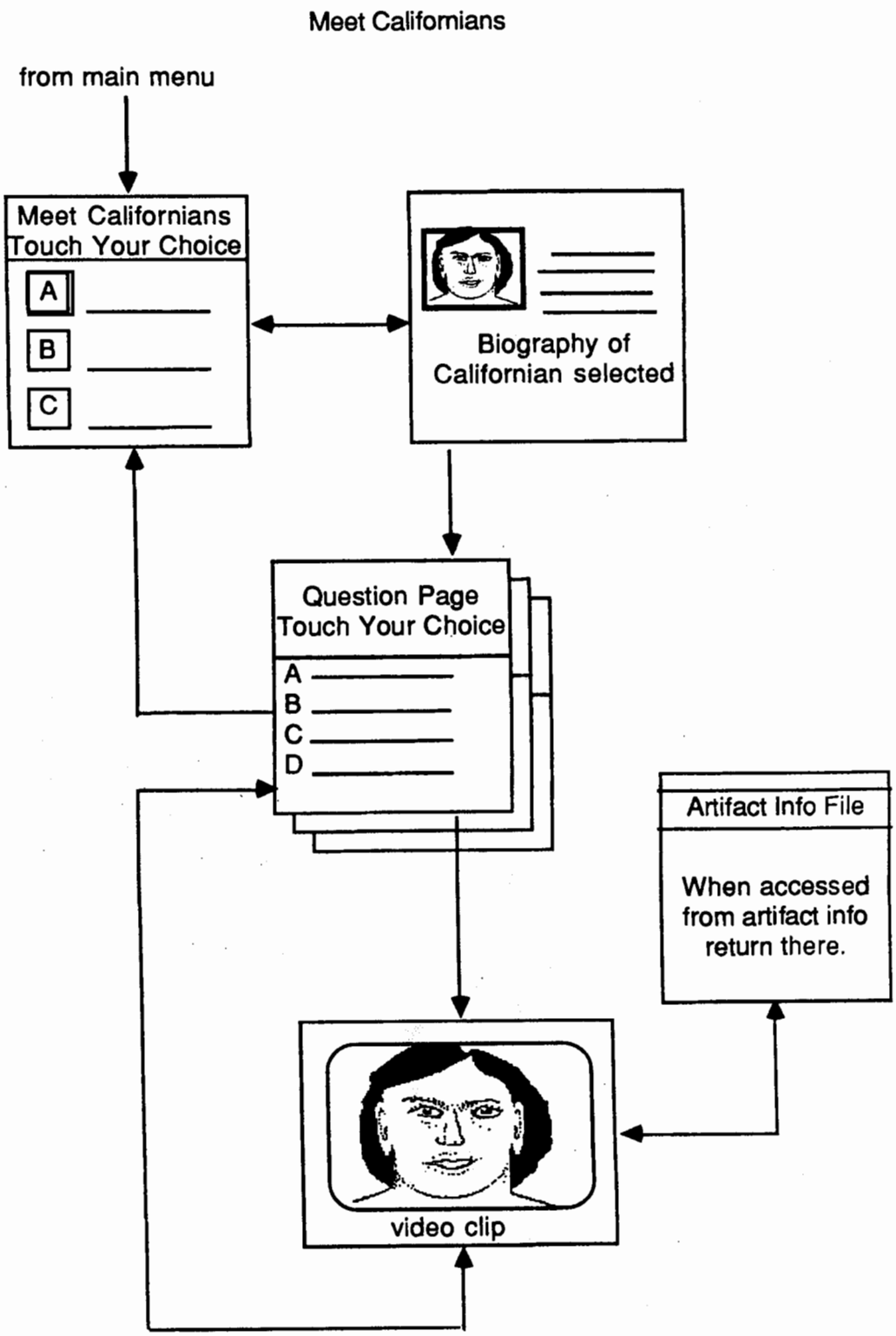
The History Information Stations opened to the public on November 15, 1990. Response on the part of staff, our docents, and the public has been enthusiastic. As one newspaper reporter wrote after going to the museum to see the new "gizmos," "Came away with mixed

emotions. As for instance, inspiration, astonishment, sadness, nostalgia, curiosity and amusement." Computer technology has indeed supported our goal to successfully expand the interpretive potential of our exhibition, engaging visitors in a more rewarding journey through California history.

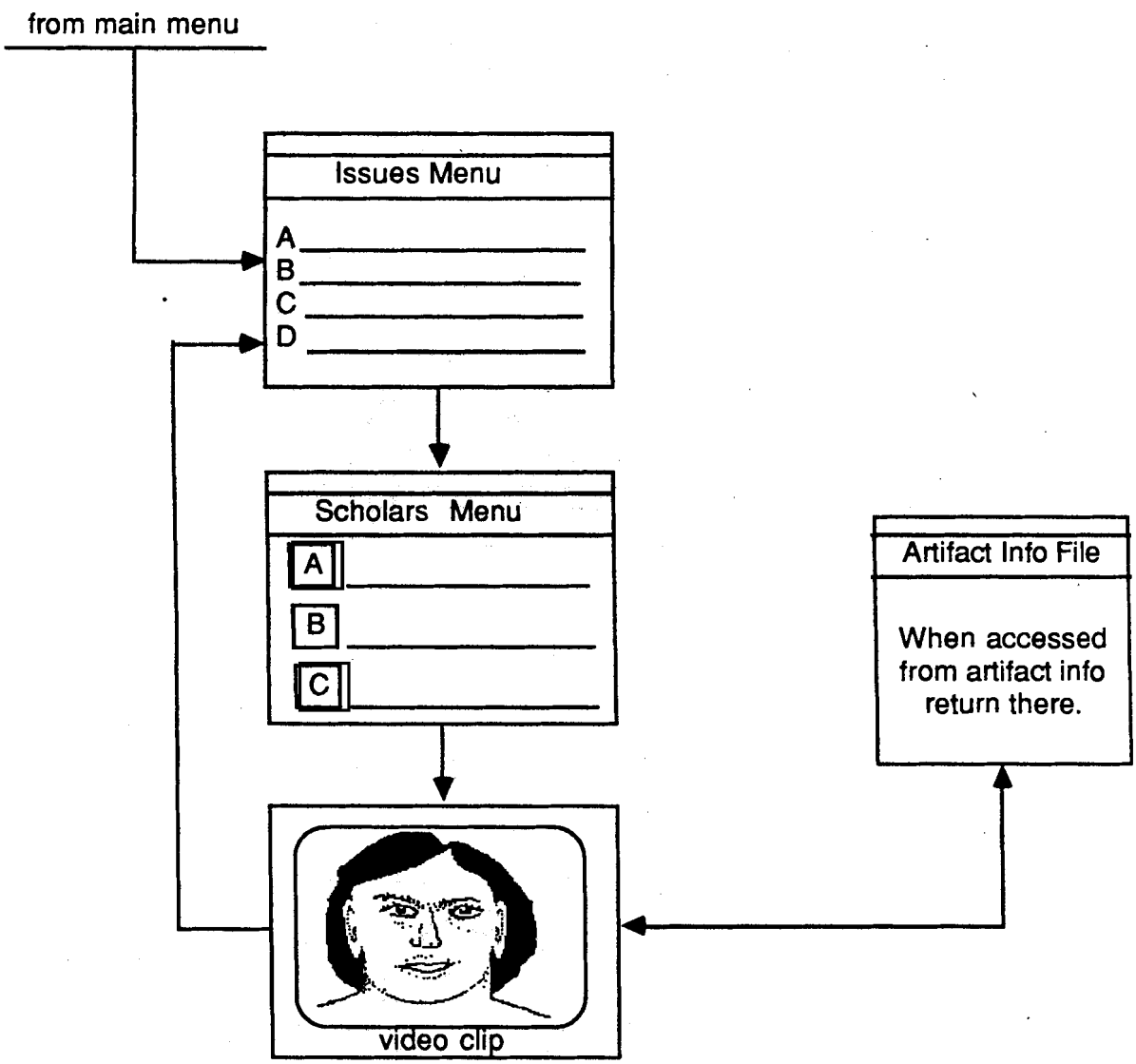


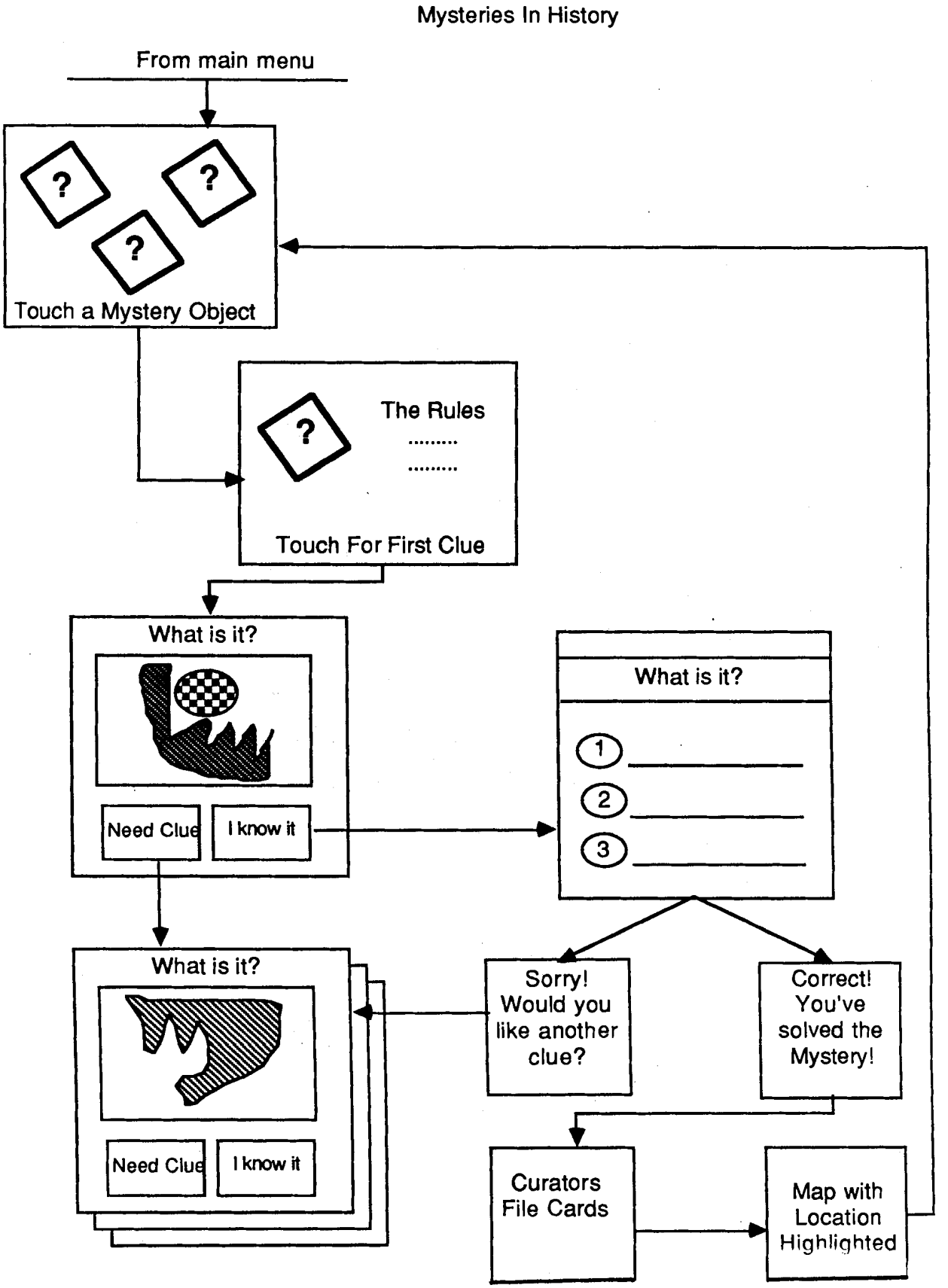
Open The Curator's File

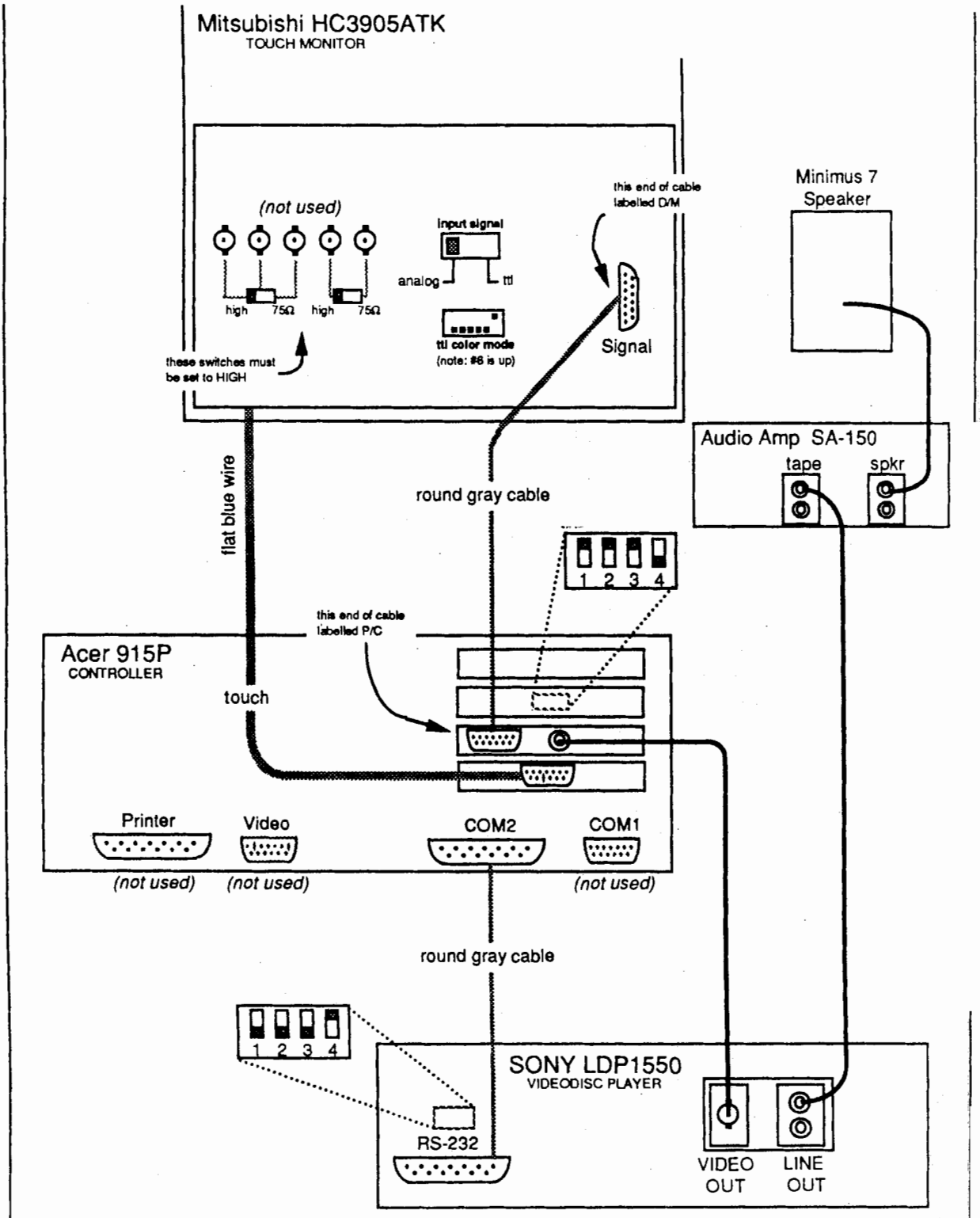




Explore Points Of View







SYSTEM DIAGRAM | THE OAKLAND MUSEUM