

"A Place for the Muses?: Negotiating the Role of Technology in Museums"

by Douglas Worts and Kristine Morrissey

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Neil Postman, the noted educator, has suggested that museums represent an attempt to answer the fundamental question "What does it mean to be human?" As individuals, we humans try to make sense of our lives by exploring the relationships between what we think and do, and the rest of our natural and cultural environment. Objects are a link to this larger context of time and place, between personal experiences and that of the human experience. Objects can symbolize, recall or illuminate something that has meaning to us—a relationship, a place, an accomplishment, a time. As individuals, we collect objects that connect us to other people, places and times. As institutions, museums collect objects for the same reasons, as they try to document collective standards of quality and provide insights into cultural trends. At the end of the 1990s, museums are facing questions that challenge their identity and purpose, largely because our increasingly 'multicultural' and technological society has become more complex which has led to new relationships between people, objects, and museums.

As our cultures attempt to redefine what it means to be a family, a community, a school, a political party, and even a nation, is it any wonder that museums — dedicated to reflecting, preserving, defining, and influencing culture — find it difficult to establish their place, and struggle to know what to reflect or preserve? The dilemma of identity and the even more fundamental question of who should define this identity are not new. In the past, changes in society, public opinion, politics, or economics have periodically challenged museums to reconsider issues of authenticity, power, control, access, representation, and empowerment of both individuals and groups. But the discussion is different today in part because of technology. Advances in technology are changing society's processes and products; they are transforming our understanding of where information originates, how it is disseminated and used, who owns it, and where and how it resides. Technology is also revolutionizing how we communicate and relate with one another.

If museums don't have a clear understanding of their relationships with information, communication, and their public, they not only miss the opportunity to effectively utilize technology's power to help transform these relationships, but run the greater risk of losing sight and control of what they become. In the book, *The Future Does Not Compute*, Stephen Talbott discusses the power of technology to shape our lives if we are not fully conscious of and responsible about how we use it. He reminds us that "what we have made, makes us" (Talbott 1995, p. 6).

Discussions of technology must start with who we are and who we want to be as museums and as museum professionals within the context of our disciplines, communities, cultures, and countries. Issues of control, empowerment, representation, authenticity, and scholarship must all be reconsidered within the context of the power and the seductiveness of technology. This chapter discusses some of the fundamental issues of museum identity and then explores implications for the development of technology-based operations.

Creating a Place for the Muses: Three experiences of the muses in museums

- A child gazes at the skull of an African elephant. After a nod from his parent, he reaches out to touch the tusk, her face showing the thrill of contact with such a creature.
- An older man calls his son's attention to various parts of an exhibit on Mexican celebrations, animatedly sharing memories of his home country.

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- A woman looks at a painting of a beaver dam in the Canadian northland, while listening to an audio recording, and enters the world of her imagination as memories, feelings, images, and associations flood her mind.

The nine muses of Greek mythology were the daughters of Zeus and Mnemosyne, the Goddess of Memory. They were sources of inspiration in the arts and sciences and according to Greek and Roman mythology, a person inspired by the muses was sacred even beyond a priest. Museums have been viewed as “temples of the muses” which provide humanity with sources of inspiration and function as the keepers of memories. In the age of digital communication and virtual realities, are museums still “temples of the muses?” Are they sources of inspiration and awe, keepers of memories? Or are they, like the immortal gods were to many in their time, interesting but essentially irrelevant to the activities of daily life? What is the relationship between museums, people, objects and memory? What role does and should technology play in this relationship?

In the early 1970s, Duncan Cameron, then director of the Brooklyn Museum, wrote a think-piece on the role of museums entitled “The Museum: A Temple or the Forum”. The concepts of “temple” and “forum” provide a useful construct for considering the dilemma of creating institutions that can both foster timely social meanings in the age of information and provide a sacred place where the muses offer insight and inspiration.

A temple implies a sacred space, involving not simply encounters with selected objects, but with the muses - which can be considered creative, symbolic experiences with aspects of the human psyche, both personal and collective. Psychologically, interaction with the muses can be thought of as interactions between a conscious ego and one's unconscious, leading to new awareness. These symbolic experiences are usually associated with insight, mystery, awe, and strong emotions, as well as a feeling of connection to a past and a position within the present. What then is the role of the temple in such an experience? A temple is a special, physical place that helps individuals to create a connection between the conscious and the unconscious. Temples often contain objects that are thought to have special symbolic status, linking the present with a spiritual realm. Often, mystery, authority and rituals are combined with regular contact in order to facilitate the 'temple experience'. There is little doubt that museums have some of the attributes of a temple -- special objects, imposing architecture that creates an out-of-the-ordinary environment and a mysterious power that inhabits the space. But whether museums are capable of truly functioning as temples is a question that needs to be addressed.

Like the temple, a forum is both a physical and a psychological space. Ideally, it is a place where ideas, daily activities, memories, dreams, joys, fears, and questions can be shared, positions can be argued, and issues can be considered. It is a place where individuals come together to share the task of understanding our present and defining our future as individuals, as groups, and as cultures. But a forum is a complex environment to create. It has to be neutral in order to enable conversation and to transcend unfair power struggles. There must be wisdom in the management of the interactions. And there has to be respect amongst the participants for all parties involved. These conditions are not easy to achieve.

Cameron argued that museums needed to play both roles, but that this could not happen simultaneously. It is questionable if museums have ever managed to become either the sacred spaces of temples or harnessed the dynamic processes of true forums. Nonetheless, if museums were committed to realizing both the concept of sacred space and that of forum, then many of the cultural and social needs of our society could be better addressed. Only in understanding, accepting, and balancing both these functions can museums find their place in this challenging age of technology.

If museums are to perform some of the functions of temples, they need to carefully consider the role of physical space, the types of experiences that characterize an experience of the sacred, the

symbolic role of objects and the critical role of communication. Physical spaces reach their full potential as sacred spaces only when they exist in relationship to the sacred space within the individual who visits. If the temple reflects the collective beliefs, history, accomplishments, and sufferings of a group within society, it is essential that individuals who come there experience their own personal and authentic manifestations of those stories, feelings, and images.

While museums have long been accepted as being important to any modern society, charges of irrelevance or elitism mirror increasing social and political pressures for greater equality in representation and equal access to power for individuals in all spheres of our daily lives. The concept of a forum suggests that museums can extend beyond the authoritative roles of traditional museums to serve as a context where individual and group knowledge and experiences are shared, interpreted, and passed on, thus becoming part of the living and evolving dimension of culture. A forum is based on a process of shared dialogue that accepts and integrates the authenticity of the knowledge and experiences of all visitors, museum professionals, and our communities.

In today's society, there are fewer opportunities to discuss community, family or personal histories and lore, or even just the events of the day. Museum objects and exhibits can help to fill this need, by evoking memories and stimulating plans, questions, or just thoughts about daily activities. A mounted bear reminds a child of the book he read in school; an exhibit on mourning rituals stimulates discussions among visitors and museum staff about memories of lost ones and then philosophical and religious issues. These types of encounters facilitate a process of self-expression and affirmation. Within social groups, each person not only experiences the exhibit differently, but experiences the relationships within the group differently.

With few exceptions, museums have only recently begun to truly embrace the function of the forum and are finding it difficult to balance this effort with the history and responsibilities associated with scholarship and traditional practice. To truly embrace the concept of the forum, museums need to address issues of trust, empowerment, and representation. Individuals must feel that their experiences and opinions are welcome and appropriate. They must feel that the museum is committed to the idea of a forum and to a process of fair and considered reflection.

In the information age, the source of meaning for museums will lie in their ability to put themselves in the center of the individual's search for connections, to become a forum for society to address the questions of meaning, to create an environment where the knowledge and assumptions about our environment and our culture are explored and continually re-created, not just by museum professionals, but by all interested members of the public. This requires a thoughtful examination of how insight comes to individuals, how they find and create meaning, and how interaction between individuals and objects sparks insight and feelings of connection. It requires changing our perspective from disseminating information to facilitating the search for knowledge.

Beyond Information

Truly speaking, it is not instruction but provocation that I can receive from another soul.

Ralph Waldo Emerson

Today, we create and disseminate information faster than at any time in our history. But are we any better at synthesizing, analyzing, evaluating, and applying information? Do we know how to use this information to improve ourselves, our families, communities, churches, schools, and other institutions? If museums consider themselves in the business of creating, finding, and disseminating "information," it is easy to move to the next step of using technology to help us provide more information to more people.

Today's technology can provide visitors with information not just through exhibitions, labels, catalogues, and other traditional interpretive methods, but through CD-ROMs, extensive databases, virtual museums, World Wide Web sites, and a variety of other formats. Although the new interfaces are exciting, the relationship between the data and the visitor is not necessarily or fundamentally changed simply because the amount of data and choices has increased.

Too much information creates what Richard Saul Wurman, author of *Information Anxiety*, describes as the black hole between data and knowledge. Wurman quotes from Michael Crichton's book *Electronic Life: How to Think About Computers*, "It's disquieting to hear that computers will provide us with more information. . . . what people really intend when they speak of information is meaning, not facts" (Wurman 1989, p. 36). Indeed, decades of research have shown that visitors are often overwhelmed by the amount of information in museums and have difficulty relating it to themselves. Many critics of the current emphasis on wholesale adoption of technology suggest that it is threatening our culture, seducing and intimidating us with overwhelming amounts of disconnected and discontinuous data at the cost of our search for knowledge.

Museums are meaningful not when they simply provide information but when they help visitors make sense of that information. They are meaningful when individuals or groups can examine their own experiences and thoughts in a larger or different context. Freeman Tilden, the great advocate of interpretation and author of the historically popular book *Interpreting Our Heritage*, describes interpretation as "an educational activity which aims to reveal meanings and relationships . . . rather than simply to communicate factual information," or more simply as "revelation based upon information" (Tilden 1957, p. 8).

In the article "Visitor Meaning-Making in Museums for a New Age," Lois Silverman suggests that the meanings and strategies visitors construct appear to cluster around "two broad and pervasive human needs: the need for individuality, including uniqueness and autonomy; and the need for community, including affiliation and interdependence" (Silverman 1995, p. 164). As museums increasingly encourage visitors to join in a dialogue about the ongoing construction of meaning around cultural and natural objects, the tensions between scholarship and other forms of meaning-making become more acute.

It is true that museum scholars, representing various academic fields, contribute to the growth of knowledge within society. They have specialized training, expertise, knowledge, and a commitment that have led them into a complex relationship with objects and knowledge through field work, collecting, research, interpretation, or some other types of interaction with objects. Their responsibility to a discipline and the value of their knowledge and commitment cannot be minimized in this time of change. However, this needs to be balanced and integrated with the recognition that there are many ways to see, study, and express history, culture, and science. This recognition leads naturally to a view of communication as a process of dialogue, rather than monologue—in turn part of a commitment to a relationship with the public.

Museums as Dialogue

The life channel of the information age is communication.

John Naisbitt

Museums have been challenged on many fronts to recognize that the stories they have traditionally told and the cultures they have most often represented have not been inclusive or dynamic. This comes at a time of rapid change in the demographic political structures of our societies. The repatriation of certain

objects to Native American groups, the continued reactions to the viewpoint of some exhibits (such as the Enola Gay exhibit), as well as the growth and popularity of museums representing the perspectives or experiences of cultural groups (like the United States Holocaust Memorial Museum, National Museum of Women in the Arts, Native American museums, and the emergence of children's museums), all speak to the growing interest in changing not only the content but the perspective of the museum—acknowledging that who tells the story is a critical part of the story. Of the ten Excellence and Equity principles put forth by the American Association of Museums, at least five refer to the need for more collaboration or acknowledgment of diversity. The fifth principle calls on museums to “assure that the interpretive process manifests a variety in cultural and intellectual perspectives and reflects an appreciation for the diversity of the museums’ public.”

A more inclusive approach to public programming in museums will affect all aspects of museum operations, from the ways technology is used, to how research is approached, to strategies for collecting, exhibiting and interpreting. The approach will have to go beyond including stories about women, children, or the working class, to changing the questions we ask and the ways we investigate and react to science, history, culture, and art. In the book *Gender Perspectives*, Edith P. Mayo's essay discusses how critical the perspective is in approaching history. She states: “Not until the theories and methodologies by which we research, write and understand history are defined by women as well as by men; not until the constructions by which history is created and written become angles of vision held by women and not by men; not until the questions we ask of history are defined also by women . . . will we see meaningful women's history in museums” (Glaser and Zenetou 1994, p. 61).

Although all perspectives can never be represented, technology offers great promise in providing and collecting multiple perspectives and can provide a forum for museums to acknowledge and discuss the natural biases that frame their handling of an issue. This shift toward more inclusive interpretive approaches also affects the dynamics and communication patterns among museum staff. It painfully challenges the traditional boundaries generally defined by training or position such as educator, curator, marketing professional, or director.

Used thoughtfully, technology can help us begin and maintain authentic dialogue among museums professionals, visitors, and the public. It can facilitate a change in the dynamics between museums and visitors as we recognize that we are partners in what museums are ultimately about—exploring and expressing our piece of the human experience.

A Starting Place for Using Technology

All of the things I have done with technology first involved wondering what is actually going on in the person and then wondering what the technology could do to amplify it. . . .

Alan Kay

In *The Museum Experience*, Falk and Dierking suggest that the exhibit design process should begin by “thinking about how the visitor might use the knowledge presented in the exhibits rather than thinking about what objects to exhibit or what ideas to present” (Falk and Dierking 1992, p. 142). This reflects the shift in museums away from the traditional authoritarian paradigm of interpretation toward a relationship based on mutual respect and shared goals. In the book, *Planning for People in Museum Exhibitions* Kathleen McLean encourages museums to consider visitors as partners in the exhibit design process (McLean 1993).

If we start our discussions of technology with what is happening in the visitor's mind and how experiences with technology can amplify that, our questions change. Instead of asking “How can I use

computers or multimedia in this exhibit?” or “How can I show off our collections, our research?” we ask, “How will visitors relate to this object? What type of interaction will illuminate or enhance the relationship between visitors and this object? How will they experience the exhibit, the museum, or their environment differently after this interaction?”

This leads us away from thinking about interactions with computers or the World Wide Web to considering interaction with ideas, thoughts, objects, questions, and each other. We begin to think about processes rather than just content. What types of activities will address the needs for individuality and community? How can technology help visitors reflect, reminisce, imagine, evaluate, compare, analyze, create, and express?

It has often been said that it is difficult to evaluate technology. Those evaluations that are conducted often look most closely at the relationship between the visitor and the technology rather than at the interaction between the visitor and the museum and how technology influences that relationship. Evaluation should start before development of any interpretive approach (including media and technology), assessing visitor attitudes and their relationship with the content or the exhibit and with interest levels. After development, we need to focus on the relationship between the visitor and the content or exhibits as well as the relationship between the visitor and the technology and how this interaction fits within the mission of the institution.

The next section of this discussion is organized around strategies for using technologies. Technology is considered broadly as any type of electronic communication tools including audio, video, computers, networks, and virtual realities, among others. The strategies are by no means a definitive list but represent a variety of formats, types of museums, and budgets and activities that provide interpretation and provocation, promote dialogue and creative meaning-making, and integrate scholarship with meaning-making. They are based on the belief that visitors should leave a museum experience (whether it is inside or outside the institution’s walls) feeling more engaged, thoughtful, in-touch, and responsible and with a better sense of who they are and how they are connected to and contribute to their culture and their natural environment.

Interpretive Strategies for Using Technology

Visitor-centered interpretive strategies personalize and contextualize the museum experience. Personalizing relates the content or the programs of the museum to the identity (past experiences, attitudes, values, fears, etc.) of the visitor. It helps individuals realize their potential to think, feel, do, imagine, relate. Contextualizing helps visitors understand or reflect on their experiences within shared value, belief, and knowledge systems.

Examples of interpretive strategies:

1. Bring the visitor’s story into the interpretive process.
2. Involve the public not just as consumers, but as creators and contributors.
3. Connect the content to the activities of the visitor’s life.
4. Connect objects to people, places, purpose.
5. Connect people to people.
6. Connect people to resources.
7. Facilitate and encourage playfulness.
8. Personalize the message through stories and narrative.
9. Involve visitors in making decisions, choices, judgments.
10. Provide multiple perspectives or viewpoints.

11. Create responsive environments.
12. Provide relevant information.

Strategy: Bring the visitor's story and experience into the interpretation

1. Visitors are a rich resource that is often untapped in the interpretation of an exhibit or program. They bring to the museum their past experiences, knowledge, curiosity, memories, and their unique way of thinking about objects. Unfortunately, museums often follow the motto of "Leave nothing but footprints, take nothing but photographs." Technology can provide a mechanism for visitors to leave behind a piece of themselves, thereby not only engaging in self-expression and affirmation, but adding to the richness of the story the next visitor will experience. This may take the form of an interactive comment or question book, a database where visitors add their memories and writings, or a multimedia program that captures images or words of visitors and integrates them into an existing database, Web page, or other format.

Strategy: Involve visitors not just as consumers but as creators and contributors

Knowledge is reinforced when it is expressed and shared. Technology-based programs can encourage visitors to respond to exhibits and ideas through the creation of art, writing, image manipulations, or take-home visitor-designed exhibits, catalogues, or museum tours. Many museums have begun using technology in this way, particularly with young visitors who are sometimes not adequately engaged or challenged by traditional passive presentations in museums.

In CitySpace, a part of the Exploratorium's 4,000 square foot MultiMedia Playground '95, kids designed buildings using personal computers and then placed them within a growing city. Kid's Express, a program at the Indianapolis Children's Museum, involves teenagers in all aspects of newspaper production, including research, writing, image preparation, page layout, and printing. The project uses technology in a way that both encourages students' efforts and perspectives and provides a product for the public.

Strategy: Connect the content of the exhibit to the activities of the visitor's life

Museums often deal with abstract concepts and principles. Even when visitors feel that an exhibit tells an important story, they don't necessarily feel connected to it or that they are a part of it. In discussing the role of intrinsic motivation, Mihály Csikszentmihályi and Kim Hermanson write, "Most important, the link between the museum and the visitor's life needs to be made clear." Technology can engage visitors in activities that help them apply what they know to the content of the exhibit or, conversely, apply the content of the exhibit to their daily activities and decisions (Csikszentmihályi and Hermanson 1995, p. 35).

An example is the "Home Water Audit" developed by the New Mexico Museum of Natural History and Science as part of a temporary exhibit called "Arid Lands, Sacred Waters." The message of the exhibit—that water is a precious and scarce resource—became less abstract and more personal through this simple hypercard program in which users learned the consequences of their daily activities. After answering questions such as "Do you adjust the water size when you wash clothes?," users learn how much water they use daily and how much they can save through alternative behaviors such as adjusting water for the size of a laundry load.

Strategy: Connect objects to people, places, purpose

Much of the meaning of objects resides in their physical, historical, and sociological context. Technology cannot reproduce this context, but it can create a link between objects and people, places, or purposes. One particularly effective strategy is to integrate the voice and the perspective of the person(s) who created, used, collected, or found the object.

In the exhibit “Ethiopia: Traditions of Creativity” at the Michigan State University Museum, 11 video vignettes show the Ethiopians who created the objects displayed in the exhibit. A weaver and his son work outside on a handmade loom, a Harari basketmaker is shown in her home below a display of her baskets, and a contemporary painter discusses his art and the identity of Ethiopian culture. Viewers felt that they learned about the objects in a uniquely personal way and felt more appreciation of the creativity involved because they could connect the objects to a process, an individual, and a culture. One visitor said “it was like learning about the culture but learning through people. . . .” Another visitor with two young children said “it seemed real to me versus when you go to a traditional museum” (interview with Michigan State University graduate student Margaret Ropp).

Technology effectively engages visitors when it becomes invisible and the user can interact with another person. After using a multimedia program called “Making Sense of Modern Art” at the San Francisco Museum of Modern Art, a visitor commented that “the computer just disappears. . . . I was just focusing on, like, having a conversation with Dorothea Lange or listening to her” (interview with Peter Samis, Program Manager at the San Francisco Museum of Modern Art). The program he was using integrates photographs and video and audio segments with reflections by artists, art historians, and critics. The visitor went on to say that “. . . museums can be very, very off-putting places. I’m sensitive of always being . . . working in . . . the sort of sanctification of art, and of literature that happens. And I think that this, the accessibility of this, and its, sort of its humanness, the interactive aspect of it changes the nature of the museum.”

Strategy: Connect people to people

Technology can create forums for dialogue between and among people in different sites, across disciplines and ages, and without the limitations of time or location. Perhaps the most obvious examples are the popularity of World Wide Web pages, Internet addresses, and electronic bulletin boards. The popularity and relevance of these lists are evident in the number and increased specificity of topic and audience. The Museum–L discussion list had over 1,700 subscribers in 1997 after starting with less than 20 people in 1991. H-Net has more than 70 lists with about 40,000 subscribers, including humanities scholars, professors, students, and others interested in the humanities.

As technology quickly becomes a popular interface between museums and the public, we need to consider whether changing the arena of our communication changes its nature. Does it influence the subjects we talk about or avoid? Will this type of communication compete with face-to-face interaction, or lull us into a complacent belief that they are the same? If we spend an afternoon talking with dozens of colleagues on the Internet but don’t stray into our galleries to talk with visitors and other staff, what have we traded?

Just as the highways and jets that promised to connect parts of the world also led to commuter marriages, children growing up distant from their cousins, and neighbors that change regularly, we cannot assume that the wonderful resource of increased access to people via electronic networks won’t also have a price. We need to monitor our electronic communications and make sure they continue to

connect and not separate us from our public. We must continually assess whether communication is two way and inclusive.

Strategy: Connect people to resources

Just as the format of technology shapes communication, it also affects the definition and characteristics of the audience served, the nature of the interaction, and the type of resource offered. Museums are now using the capabilities of electronic connections to provide access to their traditional resources (images of objects, information about programs and hours, etc.), as well as offering new types of resources and reaching new audiences.

The Science Learning Network collaboration was created to offer on-line demonstration schools, an on-line electronic librarian, professional development in telecomputing for science educators, and other resources to support teaching and learning in science. The Smithsonian offered a Web-based interactive version of the exhibit "Ocean Planet" along with curriculum materials, a message board, ideas for hands-on projects, and links to other related sites including aquariums. The Library of Congress's "American Memory" project provides digitized versions of original source documents. Offering documents written in a historical figure's own hand, historical moving pictures, photographs, and sound recordings to classrooms and homes, it creates a different environment and attitude toward learning history.

As museums turn their attention and resources to going on-line, we must remember that not all schools, classrooms, and homes have equal access to technology. In this era of limited resources, we must consider the needs of users before we succumb to the seduction of the new technologies and abandon more traditional methods of delivery such as videotapes or print materials.

Strategy: Use technology to facilitate play

"What are human beings meant to do?" In his book *Virtual Reality*, Howard Rheingold proposes that the answer is "play." He suggests that play is seen as an antonym to "work," whereas actually, it is "our most important thinking tool" and closely related to the processes involved in science, art, and all the disciplines that require us to learn to think in new ways. He cites Bruno Bettelheim's use of the German term "Spielraum," meaning plenty of room "to move not only one's elbows but also one's mind, to experiment with things and ideas at one's leisure, or to put it colloquially, to toy with ideas" (Rheingold 1991, p. 372).

In museums, play takes on special meaning in an environment where most participants are there by free choice, during leisure time, and often within a social group—at least partially motivated by the urge to share a "nice time." Deborah Perry, a museum evaluator and researcher, has identified six affective variables that describe what museum visitors want: curiosity, confidence, challenge, control, play, and communication. She suggests that play is often underestimated in its ability to facilitate learning by incorporating both imagination and sensory enjoyment (Perry 1994, p. 71). Technology, with its ability to support interaction and multiple media formats, can provide a forum or a container for creative play where visitors creatively experiment with tools, concepts, relationships, and various aspects of art, history, science, and other ways of looking at experiences.

Strategy: Personalize the message through stories and narrative

The power of storytelling and narrative continues to capture attention and imagination, providing context, drama, and personal connections. Stories and individual perspectives can evoke an empathetic or sympathetic response that helps visitors personalize the message. In his musings about virtual realities, Rheingold discusses the origins of drama and the importance of catharsis as a healthy and necessary way for people to deal with the themes of life and death. He suggests that an understanding of the how we provoke or stimulate catharsis might become a foundation of the emerging psychological investigation of virtual experience.

The Minnesota History Center uses a variety of media formats to bring stories and personal narrative into the interpretive presentation of their exhibits. In an exhibit on communities, visitors sit in the passenger section of a simulated plane and Vietnam War veterans reflect on their feelings during their journey to Vietnam. In the exhibit “Minnesota A to Z,” the letter “V,” for voices, presents the experiences of real people using audio from a rich oral history collection. As part of an exhibit on families, a multimedia program called “Everything Must Change” integrates actual objects on a stage with a media presentation about the events and rituals that mark important stages of life.

In “A More Perfect Union,” an exhibition at the Smithsonian’s National Museum of American History about the treatment of Japanese Americans during WWII, a simulation of a Spartan room in a simple wood building includes numerous beds, trunks, a table, and a clothesline. These objects evoke curiosity about what this room was used for. Through the use of continuous-loop, backscreen-projected film, a man and child appear at a doorway. The adult starts telling the child about his experiences living in this room. He and other Japanese Americans were forced into internment camps during WWI. The very real dialogue engages emotional faculties and evokes an empathic connection between visitors and history. Viewers integrate the information into their existing world view, thus encouraging their imaginations to acknowledge the capacity for human cruelty in our society.

Strategy: Engage visitors in making decisions, choices, and evaluations

Perhaps one of the most common outcomes of a museum visit is not the acquisition of new information, but the opportunity to apply or synthesize existing knowledge. Activities that engage visitors in making choices, decisions, or evaluations are likely to engage their imaginations and intellects and encourage “mindfulness” rather than the “mindlessness” that can overcome museum audiences. Decision-making activities can also encourage social interaction as families or friends discuss alternatives and potential consequences of choices, leading to a deeper level of processing or synthesizing content.

At the end of the “Science in American Life” exhibit at the National Museum of American History, a computer program asks visitors a series of questions regarding their attitudes about science and scientists. Responses are added to a database; a chart displays the distribution of answers. People have an opportunity to compare their attitudes to those of other museum visitors, thereby heightening an awareness not only of their own attitudes but of how they fit within a larger social context.

Strategy: Provide multiple perspectives and viewpoints

Providing multiple perspectives can balance the picture and assure visitors that there are many ways to understand or interpret events and objects. This can increase their confidence in their own knowledge and interpretive abilities. The viewpoints may represent different disciplines, levels of expertise (an expert versus a novice), relationships with the object (user, collector, creator), theories or philosophical issues (“Is clear-cutting ultimately good for the environment?” or “Are dinosaurs related to birds?”). Technology can also engage visitors in making choices or analyses and reacting to theories.

This approach fosters a richer understanding of the complexity of most issues and encourages visitors to view a discipline (history, science, economics, etc.) as a dynamic process of forming, testing, and evaluating hypotheses rather than as a static body of content.

Strategy: Create responsive environments

What is the relationship between ambient temperature and the internal temperature of a reptile or of a mammal? How does changing the ambient temperature change that of a so-called “cold-blooded” or “warm-blooded” animal? Labels can explain this, and realistic walk-through immersion dioramas can depict a desert scene with reptiles and mammals, but neither allows visitors to see the dynamic relationship between those two temperatures, which is crucial to understanding why it is inaccurate to describe reptiles as “cold-blooded” and mammals as “warm-blooded.”

Computer technology can create responsive environments in which visitors manipulate variables and experience the consequences, helping them recognize the relationship between variables. While simulations have been popular for a long time, they are sometimes superficial, and the variables manipulated and the consequences may not approximate the natural world. In the book *Virtual Reality*, Brenda Laurel, who has promoted the concept of technology as theater, envisions dramatically created worlds “where characters make choices with clear causal connections to outcomes, where larger forces like ethics, fate or serendipity form constellations of meaning that are only rarely afforded by the real world. . . . If we can make such worlds interactive, where a user’s choices and actions can flow through the dramatic lens, then we will enable an exercise of the imagination, intellect, and spirit that is of an entirely new order” (Rheingold 1991, p. 306). Virtual realities and graphic capabilities will provide unimagined opportunities to create responsive environments, but it is up to us to determine whether we will use the power to pursue authenticity or attractive but superficial “bells and whistles.”

Strategy: Provide relevant information

There is clearly a role for technology as a provider of information. Overviews or orientations allow visitors to print out their own floor plans of museums or quickly find a specific exhibit or information about daily programs. A Web site can provide information for teachers; a photo CD can provide images of collections for families to view at home; on-line access to information about a museum’s vertebrate paleontology collection may save or prompt a visit to the institution by a scholar.

People are probably most easily seduced by the power and capabilities of technology as a source of information. They begin to dream of huge databases containing images of all the museum’s collections, shown at different angles, in 3-D, and maybe even in animated or video segments. But museums must remember to match the format and content with the needs and interests of users. We can’t assume that “if we build it, they will come.” Not only is this a naive and dangerous way to allocate resources, but we run the risk of using technology in ways that alienate or overwhelm visitors.

Where Philosophy Meets Practice: Two Stories

The OH!Canada Project
Art Gallery of Ontario

In 1995, the Art Gallery of Ontario in Toronto, Canada, launched a large project that combined art, technology and the public (Worts, 1997). Much more than an art exhibition, it was billed as “the Gallery’s

first-time-ever, interactive, multimedia, ‘you're gonna love it’ art event—starring the Group of Seven, leading Canadian artists and you.” OH!Canada was a blockbuster of a very different sort. Essentially, OH!Canada aimed to explore two themes - environment and identity - from historical and contemporary perspectives. It was believed that the Project could use the visual arts to create a resonant link between the past and the present, using enduring themes that have been relevant for a long time.

The historical anchor of the Project featured an exhibition of stunning landscape paintings by the Group of Seven (Canada's best-known artists) to mark the 75th anniversary of their first exhibition. The group is renowned for its efforts to capture the very essence of Canadian identity in the many landscapes of the country. Group members also were sensitive to the many forces that threatened the natural environment.

A second component was a three-part exhibit/forum on the question of “What Makes a Nation: People? Stories? Lands?” in which artworks from 1930 to 1995 were used to explore how artists have reflected on the same themes as the Group of Seven, but with very different results—reflecting changing times. Critical to this installation was the use of video recordings of interviews with a wide cross-section of people who spoke about their experiences of Canada. Included were long-time residents, Native Canadians, recent immigrants, children and seniors. They expressed their thoughts in English, French, Italian, and Mandarin. These testimonials provided questions, provocation, and insights on the subject of “What makes a nation?”, as interview subjects discussed special places, memorable stories, and important people. Three video monitors—one each for “Stories?”, “People?,” and “Land?”—were embedded in tables with pencils and cards available for visitors to record their own responses. Other visitors could then browse through the cards.

The most radical, contemporary, and engaging part of the project was the OH!Canada Workshop, which filled the second-largest exhibition hall in the museum. About two-thirds of the space was given over to six community groups and six schools, each of which created an art installation reflecting on the themes of identity and the natural environment. The community groups were not representative of the gallery’s traditional audience. Included were four First Nations artists, a traditional Chinese brush painting school, an adult English as a Second Language (ESL) class, a storefront community arts group from a Toronto neighborhood, and a group of Latino teenagers who cover the city with graffiti. The participating schools (including elementary, secondary and college-level) spent three months studying the themes in class and finding a way to express both individual and collective responses to them.

Beyond these installations, a large space was available for audience participation. At a 30-foot long table, visitors could write, draw, color, cut, and paste on “Make Your Mark” cards, which were then displayed on a big “Share Your Reaction” wall. On a wall of equal dimension was a gigantic blackboard on which visitors could write and draw their reactions. A local television station, BRAVO!, provided a Speakers Corner, which recorded on video the comments of the public, which were then selectively aired on television, as well as edited and run on video monitors in the exhibit space. Using the somewhat older technology of fax machines, schools and the public alike were encouraged to send their writings and images. Many of the public reactions were elicited by a “Question of the Week” (such as “Is Canada falling apart, or just growing up?”, “What symbols of Canada have meaning for you?”, “What do you love and hate about Canada?”). These questions were developed by a team that reviewed all public responses and tried to respond to issues raised by the discourse.

All these facets of the project were also integrated into the gallery's new World Wide Web site. The site was designed to provide rich information on the project, as well an invitation to respond to its themes. The “Question of the Week” figured prominently on the site and was directly connected to an open-ended database in which users from anywhere in the world (but our target was Canada) could feel comfortable browsing other submissions and contributing their own.

This very active approach to the OH!Canada Project represents the Art Gallery of Ontario's attempt to turn away from the more narrow public programming that has characterized art museums for such a long time. A balance was sought between the quiet, reflective spaces in a compelling exhibition and the dynamic exchange of a lively forum. The past became better connected to the present, and the present provided a motivational gateway into new explorations of the past. Many responses surfaced. Some patrons felt much more comfortable within the walls of the museum during this period, while other regular visitors felt that their sanctuary had been partially invaded. Controversy also arose when some members of the public overtly—and comfortably—expressed racism and intolerance in contributions to the forum. The museum realizes that it will take some effort to really understand how best to manage the dynamics of combining the concept of the temple and the forum. Yet, for all that is still to be achieved, the OH!Canada Project represents one of the more aggressive efforts to use technology when expanding the museum experience into areas where it rarely ventures.

Hockey Hall of Fame

Toronto, Canada

The new Hockey Hall of Fame in Toronto re-invented itself in 1993, becoming a powerful example of how objects, stories, technology-based exhibits, and visitors can be brought together in a balanced way creating an experience that is both personal and collective. Using trophies (the Stanley Cup is always on view - and is touchable!), photos, and details about hockey stars, the shrine function of the hall encourages individuals to explore and pay homage to the people whose skills have inspired youth to develop their own potential. In this space, visitors' personal associations with professional hockey help create an intense and usually affirming moment.

The lion's share of space is dedicated to interactive, information-rich exhibits designed as a series of “zones.” One particularly popular area is a full-scale reproduction of the Montreal Canadiens dressing room. Visitors can touch authentic clothing and equipment while they watch a 12-minute video of the Montreal players preparing to go onto the ice for a National Hockey League game. As the video ends with a call for the players to enter the arena, a set of double doors springs open and visitors exit into a room that feels like an arena. The sensation of “being there” is enhanced by a blast of cold air, rubberized flooring underfoot, and a recording of an enthusiastic crowd. A sophisticated sports medicine display using multimedia exhibit technology extends the experience of the Dressing Room Zone. It is truly a multi-sensory, imaginative experience.

The "North American Zone" offers an in-depth look at the many amateur and professional hockey leagues that operate on this continent. Using interactive, multimedia technology along with a large map of Canada and the United States, visitors can access information about the many variations of hockey found in this part of the world. People from all over North America are invited to submit their team photographs and logos for inclusion in an ever-growing visual database, which showcases some of the intensely personal ways in which individuals make hockey part of their own lives.

In the new Hockey Hall of Fame, as in similar institutions, visitors learn about hockey through significant historical objects, touch-screen information kiosks, and engaging environments. But they also actively participate in the fundamentals of hockey itself with the help of sophisticated technology. Two extraordinary exhibits exemplify this aspect of the hall. In the first, the visitor, with pads and hockey stick in hand, stands in front of a goalie net, as professional hockey players shoot pucks at him or her. But the pucks that fly do not endanger the would-be goalie because this exhibit relies on virtual reality. Despite the absence of a real puck, visitors get to feel what it's like to be a goalie. In the second exhibit, visitors can test their skill by stepping onto simulated ice and shooting pucks at video-projected goalies.

Computers calculate the speed and direction of each puck and let visitors know if they scored. The pucks and sticks in this exhibit are the real thing, and the physical experience offered here is a great complement to the more cerebral nature of other installations.

A highlight of any visit is a stop at the television network exhibit. Here, banks of monitors, miles of cable, and a robotics producer offer visitors a behind-the-scenes view of a televised hockey broadcast. Visitors who are brave enough can test their skill as television announcers. A high-tech broadcast booth gives people a chance to watch a great moment in professional hockey, while a professional announcer provides commentary. Then, the action is replayed without commentary; printed prompts tell which player has the puck at any given second. Visitors are left to announce the play into a microphone, and their efforts are played back for them to hear. It is great fun and yet another example of a non-traditional interpretive strategy in an exhibition.

Final Thoughts

The best way to predict the future is to invent it.

Alan Kay

What is the real challenge for museums in the information age? Is it learning how to use new technologies and keeping up with rapid developments? Is it changing our perspective from reflections on the past to projections of the future? The real challenge that will shape our identity and our future, lies in considering not just the technology or the tools, but the individual, the group, our cultures, and our institutions. The real challenge is in better understanding how technology can illuminate and enhance the complex relationships between people and objects.

At its best, technology can facilitate experiences in which visitors can both transcend and live more fully in their daily lives, thoughts, and activities. It can challenge visitors to reconsider or create new meanings. It can help visitors see their experiences in a context that connects them to other people, other places, and times. It can help museums realize their institutional potential as they help people realize their individual potential. The final challenge then is no less than that of placing technology in the service of understanding and enhancing the human experience.

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