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BACK TO BASICS: HOW THE DEVELOPMENTAL MODEL OF LEARNING INFORMS MULTIMEDIA CHOICES FOR ART MUSEUMS

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Abstract (EN)

This paper reviews learning theory as it applies to art museum education and explores the relationship between American museum visitors' art knowledge, reflective thinking and learning, and the design and content of interactive media in the galleries of The Minneapolis Institute of Arts over the last ten years. The paper cites research about what visitors want to know and how they prefer to encounter information in the galleries. A number of different interactive program designs are illustrated and analyzed, with recommendations for next steps.

Keywords: Education, Stage theory, Beginner viewer, Learner-centered, Aesthetic development, Interactive gallery program design, Visitor studies

Zusammenfassung (DE)

Dieser Vortrag bespricht, wie die Lerntheorie in der Museumspädagogik von Kunstmuseen angewandt wird und untersucht die Beziehung zwischen dem Kunstwissen Amerikanischer Museumsbesucher, reflektierendem Denken und Lernen, und dem Design und Inhalt von interaktiven Medien in den Galerien des Minneapolis Institute of Arts in den vergangenen zehn Jahren. Dabei beziehe ich mich auf die Forschung, die sich damit auseinandersetzt, was Besucher wissen wollen und auf welche Weise sie in Galerien bevorzugt mit Informationen in Berührung kommen. Einige verschiedene interaktive Programmdesigns werden erläutert und analysiert. Darüber hinaus werden Vorschläge für die nächsten Schritte gemacht.

Schlüsselwörter (DE): Bildung, Theorie der Entwicklungsstufen, lernerzentriert, ästhetische Entwicklung, interaktives Galerie-Programmdesign, Besucherstudien.

Résumé (FR)

Cette communication passe en revue les théories de l'instruction qui sous-tendent l'action educative des museés d'art aux États-Unis, et elle examine le rapport entre la connaissance de l'art de nos visiteurs, les principes de la pensée réflexives et l'instruction, et le contenu et le design des bornes interactives dans les galeries du *Minneapolis Institute of Arts*. Cet article évoque les questions posées par les visiteurs et les manières selon lesquelles ils préfèrent trouver l'information dans le musée. Une discussion sur le design d'une sélection de programmes interactifs sert de base à l'auteur pour établir ses recommandations.

Mots clés: Éducation, Théorie des niveaux (*Stage Theory*), Visiteur débutant, Apprentissage centré sur l'apprenant, Développement esthétique, Design interactif pour les galeries, Études du visiteur.

I. The Developmental Model of Learning

In the 1920s and 30s, Swiss psychologist Jean Piaget proposed a theory of learning as a continuum of development through successive stages (see http://www.time.com./time100/scientist/profile/piaget.html for a short critical biography). According to developmental stage theory, a 7 year old and a 70 year old, when learning something that is new to them, will begin in the same way: that is, they will relate the new information to their prior life experience and existing knowledge that is relevant to the new subject. Beginning learners can fairly be characterized as autobiographical and self-referential, no matter what their chronological age. Developmental stage theory, then, is the foundation of "child-centered" and "learner-centered" education. In their chapter on "Educational Theory," Hein and Alexander (1998) nicely summarize how this understanding of learning can be fruitfully integrated into museum practice.

In the 1980s, Dr. Abigail Housen, a psychologist who grew up in art museums, interviewed thousands of "beginner art viewers" and developed a theory of aesthetic development that also distinguishes stages of skill acquisition. It parallels Piaget's theory to the extent that Dr. Housen found aesthetic growth to be sequential. That is, people studying art must go through the stages *in order*; it is not possible to change the sequence or to skip stages. Dr. Housen's theory differs from that of Piaget in one key respect: it is not age-dependant. Dr. Housen found that a beginner viewer may be five years old or seventy-five years old. The factor that most determines aesthetic stage is the amount of art-looking and art-thinking experience that the subject has had.

In her doctoral dissertation, The Eye of the Beholder, Abigail Housen outlines five distinct stages of aesthetic development and describes the kind of thinking that characterizes each stage (1983). You can also find detailed stage descriptions at http://www.vue.org. Briefly, viewers at Stage 1 relate the things they see in the museum to their own lives. These viewers are frequently heard to make comments such as, "My grandmother had a clock like that." Stage 2 viewers have developed naïve personal definitions of art that frequently include naturalism and technical skill, and they will look for these. A Stage 3 art viewer has had numerous art viewing experiences, can identify major artists' styles, and has a general idea of the flow of art history. A Stage 4 viewer is likely an arts professional, devoting time every day to looking at and learning about art. Finally, a Stage 5 viewer has developed, over a lifetime, a vast body of knowledge and a personal and ever-renewing relationship with works of art. In most fields, it takes ten years of intensive study and practice (the average length of time of undergraduate and graduate study directed toward the Ph.D.) to develop true expertise (Schacter, 1992).

II. What Do Visitors Want to Know?

Dr. Housen conducted research projects for the Museum of Modern Art (MoMA) to evaluate the visual literacy of MoMA's visitors (1986 and 1992). These studies constituted the largest body of data collected by any museum at that time, and possibly remain so. Dr. Housen determined that most visitors to American art museums, including MoMA's visitors, are Stage 1 and 2 viewers. Yet, she noted, most interpretive materials in museums are written for Stages 3 and higher. Stage 1 and 2 viewers are most likely to ask, "What's this about, what's going on?" in the case of representational art. They might wonder, "What is it, what's it for?" in the case of a functional object from another culture or era. Or they might wish to know, "How was this made?" if material and technique are emphasized in the work of art. They are unlikely to spend much time viewing non-representational art.

In the same year that MoMA published their results, The Minneapolis Institute of Arts surveyed visitors in seventeen different areas of the museum about the effectiveness of information on gallery labels (1992). In each area, we first asked visitors to gauge their level of knowledge. Nearly every visitor to the Ancient galleries claimed they knew at least something about ancient art; however, it turned out that they meant they knew something about ancient history. In fact, visitors were surprised by the range of objects in those galleries and the degree of technological sophistication brought to bear in their creation. The same confusion between historical knowledge and *art* historical knowledge was true with regard to American art. There were also areas of the collection, like the northern European and medieval galleries, where nearly all visitors said they had no existing knowledge at all, no idea what kind of art they would find there.

When we asked, "What did you want to know that you were unable to find out?" visitors to all areas of the collection said they most wanted to know *what the objects meant to the people who produced them.* This is not the same thing as describing the subject depicted in a work of art or the function of an object. Visitors wanted to know, in very broad terms, about the cultural values of times past. They were searching for ways to span the distance of time and differences between cultures, looking for universally human motivations and emotions. Along the way, they needed to have even such basic art terms as "Renaissance" and "Impressionism" explained and/or reviewed. Our visitors were baffled by such historical terms as "Ptolemaic" and "Attic," and art terms such as "boss," "brushstroke," and "chiaroscuro." They wanted to have iconography decoded and symbols explained. We learned that because most art of the 18th and 19th centuries is highly narrative, visitors had fewer questions about meaning in those galleries.

As we entered the 19th century galleries, the century that birthed the idea of the artist as inspired genius, visitors were implicitly *aware* of the artist's personality and wanted to know details of

his or her life. Likewise, they wanted to know about individual artists' philosophies in the 20th century, and about the aims and programs of modern art movements. Because most of our visitors are Stage 1 and Stage 2 viewers, they had a difficult time with contemporary art, which doesn't fit their ideas of "art." Here, they needed information that would expand their thinking. Visitors to the decorative arts galleries seemed generally unaware of the possibility for objects to function symbolically as well as practically, another kind of expanded thinking that needed support.

III. The Relationship of Interactive Content, Design, and Platform

The Minneapolis Institute of Arts has been a leader in the integration of media in the museum since the 1980s. We had early on determined that we would use new multimedia technologies to show things that could not be seen in the galleries, answering those Stage 1 and Stage 2 viewers' questions about how things were used and what they meant to the people who made them. Our first productions, essentially "video jukeboxes" created for the African art and Native American art galleries, offer a selection of mini-documentaries that discuss broad themes or show objects being used in their cultural context [Fig. 1]. In some cases we located and obtained permission to use very rare video images from academic experts [Fig. 2], and in some cases we shot the video ourselves. The simplest of these programs initially ran off videodisks.

Fig. 1: Menu, African Art and Culture

Fig. 2: Goli mask being danced, African Art and Culture

In galleries where distinctions of process are emphasized, visitors wanted to know how things were made and how to look for signs of the process in the works of art. "Prints and Processes" is an interactive program that combines video and computer animation to demonstrate four methods of printmaking. The interface design for this program has a very tactile look, in keeping with the emphasis on an artist's hands working with different media [Fig. 3]. "Prints and Processes" also gives users a chance to see a selection of prints in the museum's collection that, because they are on paper, are infrequently on view in the galleries. "From Silver to Silica: Photographs from the Institute's Collection" is another example of

making a selection of fragile, seldom-seen works of art available at all times through an interactive program in a gallery [Fig. 4]. Despite the warm reception of these programs ("Prints and Processes" sells well as a CD-Rom), eventually we came to feel somewhat apologetic about the relative passivity of showing use and process, and we were eager to create more interactivity in our gallery programs.

Fig. 3: Cutting the woodblock, Prints and Processes,

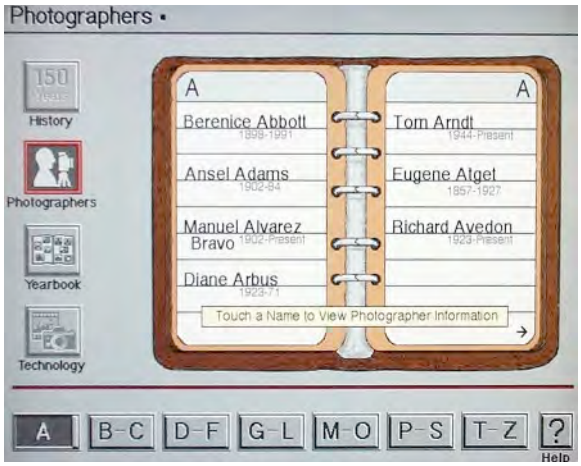

Fig 4: Photographers notebook, From Silver to Silica: Photographs from the Institute's Collection

The interactive multimedia field has grown too fast to allow development of the theory that ought to underlie practice, never mind opportunities to adequately test the theory. Therefore, it is not surprising that there was no consensus among staff at this museum about what "greater (and meaningful) interactivity" would look like. As it happened, growing curatorial collaboration determined that the content of subsequent productions became more dense and text driven.
Material began to be organized to support searching for information rather than creating broad understandings [Fig. 5]. New interactive programs became study references, not necessarily geared to the visitor's experience of seeing the works of art in the galleries [Fig. 6]. One program even denied the fact that it was located in our galleries, with their own reality, and presented the works of art in a very different virtual museum [Fig. 7]. There, the works of art first appear as tiny blobs that only become recognizable as the viewer clicks on them repeatedly, rather in the style of *Myst*. If the viewer chooses to virtually visit the Resource Room, she or he encounters an assortment of study tools and references [Fig. 8]. Clicking on a file cabinet brings forth a virtual card catalog of terms, historical periods, and works of art by title [Fig. 9].

Fig. 5: Menu, The Art of Persuasion

Fig. 6: Glossary, The Art of Persuasion

Fig. 7: Menu, Ancient Art of the Mediterranean

Fig. 8: Resource Room, Ancient Art of the Mediterranean

Fig. 9: Theme file drawer, Ancient Art of the Mediterranean

It is fair to ask if rotating a space, or clicking and choosing, is meaningful interactivity, especially given that many of these terms (only one of which is really a theme) are specialist vocabulary, the meaning of which is known only to those who have studied art or art history of this period. Based on our own 1992 study, it is unlikely that our average visitor could use many of these terms effectively. Remember that he or she is an art novice who will not know that *amphora*, *krater*, *hydria*, *kylix*, and *lekythoi* are Greek vase types, or even that Aphrodite is the Greek goddess of love and beauty. Supporting this assertion, the museum recently conducted an

Internet survey of 1,277 Minneapolis/St. Paul area residents who had visited *any* museum in the last year. This group represents less than 5% of the population of the metro area; only 13.7% of them characterized themselves as "more knowledgeable about art than most people" (McKinsey & Company, 2004). Allowing for the human ego that causes respondents to overestimate their knowledge, or the "halo effect" (telling the interviewer what the subject thinks the interviewer wants to hear), the actual percentage of art knowledgeable residents of Minneapolis/St. Paul is probably closer to .005%. It is clearly not in our interest to use content that is understood by only a small portion of our potential audience as the basis for the interactivity (clicking and choosing) in a gallery-based program.

IV. Delivery via the Web

At the same time as The Minneapolis Institute of Arts was creating 1.5 interactive gallery programs per year, we were going digital in all functional areas, from collections management to tour scheduling to image management and distribution, and building two Web sites (http://www.artsmia.org/ and http://artsconnected.org/). The temptation to gather together information from many digital sources to create ever-richer and relatively maintenance-free Web-based programs was irresistible. "Modern Design in the Institute's Collection," for example, is essentially a keyword searching experience that would be useful to a collector, an art history major who is writing a paper, or to sales gallery or auction house staff eager to find museum examples comparable to something in their inventory [Fig. 10]. The tiny type and small images reflect, in part, the realities of delivering material via the Internet's operational standards, but also hint at the tradition of the museum catalogue.

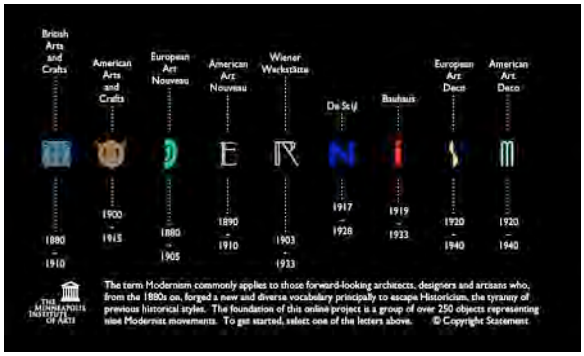

Fig. 10: Menu, Modern Design in the Institute's Collection http://www.artsmia.org/modernism/

The "Modernism" program is, in fact, a book - an online catalogue of over 250 objects in a collection that was given intact to the museum several years ago. Another example of an online catalogue is the Institute's collection of architectural elements and decorative arts in the Prairie School style [Fig. 11]. Here, interactivity is limited to reading, and maybe clicking on the tiny photos to make them bigger [Fig. 12]. One can understand the desire of curators to publish catalogues of their collections, and the need of the museum to honor the gifts of major collectors

with publications, but is this same product appropriate in the galleries? Does it immediately support the act of looking at, reflecting about, and finding personal significance and pleasure in works of art that the visitor has come to the museum to experience? And, even more importantly, are we exploiting the unique potential of interactive technology to engage people in new ways and help them find answers to their *own* questions?

Fig. 11: Introduction, Unified Vision
http://www.artsmia.org/unified-vision/collection/

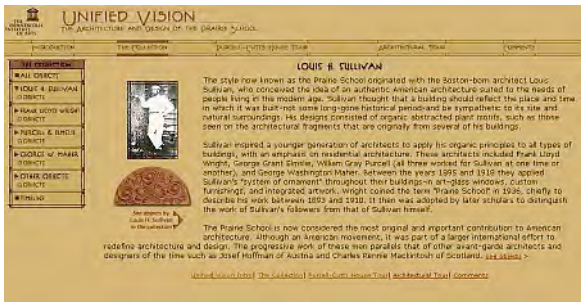

Fig. 12: Louis Sullivan biography, Unified Vision
http://www.artsmia.org/unified-vision/collection/sullivan.cfm

V. Supporting Visitors' Needs with Interactive Media

In 2001, The Minneapolis Institute of Arts initiated a two-and-a-half-year project to assess visitors' awareness of, use of, and satisfaction with technology in the museum, including its Museum Directory, the interactive gallery-based programs, and its main Web site (2004). Eighteen separate reports, as well as all survey instruments used in the research project, can be accessed at http://www.artsmia.org/what-clicks. We learned that our interactive learning stations, designed as small, discrete annexes to sixteen galleries throughout the museum, were "easy to miss," and were actually visited by a very small percentage of museum visitors (9% in 2002 and 23% in 2003). Because many of these learning stations were carved out of old elevator shafts and other opportunities presented by our 1914 Beaux Arts style building, they were, we concluded, too discrete. For the visitors who found them, however, the content of the interactive programs was deemed useful, with 76% in both survey years saying that they "enhanced my understanding and appreciation of the art quite a bit/very much." An even larger number, 78% in 2002 and 85% in 2003, said that they would have preferred the content of the program "*in the gallery, close to the works of art*." Having seen the Victoria and Albert Museum's new British Galleries, where (among many interactive interpretive strategies) small liquid crystal displays (LCDs) deliver object-specific information to great effect, we conducted a qualitative study of six experimental LCD installations (Minneapolis, 2003). We wanted to find out if the video technology enhanced the visitor's experience and, if so, how? We also wanted to determine if the video, installed right next to the work of art in five out of six instances, distracted from visitors' experience of the art object itself.

The content for four of the six LCDs was taken from existing interactive gallery programs. These fragments included a Northwest Coast raven transformation mask opening at the end of a

dance ceremony; Tibetan monks making a huge sand mandala in the museum; the restoration of a 17th century altarpiece; and a Goli festival mask being danced in a Baule village. We purchased one short production on the customs of tea drinking from the Victoria and Albert Museum, shown next to a case of silver and ceramic tea wares, and bought the rights to use a segment from a Japanese video production on Noh drama, shown in the middle of a gallery of Noh robes. The duration of these short videos, some with sound audible to the gallery, some with headsets, some silent, varied from 45 seconds to 4 minutes.

Visitors said that the videos contributed to their understanding, appreciation and enjoyment of their gallery experience, including the experiences of more "art savvy" focus group participants. Many agreed that sound can be particularly effective as a way to create context, and that music greatly enhanced their experience and contributed to their interest in spending time in a gallery. There was only one report of an LCD or its video content interfering with a visitor's enjoyment of a work of art. In fact, several focus group participants failed to notice a number of the LCDs and had to be directed to them. Some participants said that the LCDs filled a gap between very general information found at the entry to major cultural sections of the museum and object-specific information found on labels. They thought we should describe the content in a small label on the screen housing and indicate running length, and they preferred continuous play over "touch to begin," primarily out of consideration for others who might be watching.

Focus group participants were surprisingly articulate about the nature of memorable museum experiences and the way the experimental LCDs could contribute to them. They agreed that were they not part of a focus group, they would have felt free to ignore the small screens. They thought that the optional nature of watching would be important for all visitors. During a discussion of the various types of content, length, and sound/no sound, one participant said, " I simply liked the variety. I think if they had a standardized format and length, you'd lose some of the beauty of what has been achieved here by the producers of these things. Again, the content differed; the plot, or lack thereof, differed. I think the variety makes the experience a little less 'media.' To me, I think that added to the richness of it. You wouldn't have already a preprogrammed idea of what this video was going to be if you went from gallery to gallery on a typical 'moseying' day at the galleries" (Minneapolis, 2003). This observation corresponds to museum visitor literature about the need for multiple entry points for different learning styles and experience (Falk & Dierking, 1992).

"Unpacking" some of the rich content of the interactive gallery programs was recommended several years ago by Dr. Nora Paul, Director of the Institute for New Media Studies, School of Journalism and Mass Communications, at the University of Minnesota, who toured the museum's galleries as a critical friend. She suggested that media be used in the galleries to support the experience of works of art, and that for the bulk of our visitors, small segments, showing what can't be represented in an analog form within the museum, are best. In a June 24,

2004 telephone conversation, Dr. Paul advised us to "keep it simple." A focus group participant echoed her advice when she said, "I have to go back to the African masks setting. You walked into that setting, and it hit you…. It was something that wasn't trying to go through 1,500 years of history. It was these masks, and this is what happens here, and that was nice. I really, really appreciated that" (Minneapolis, 2003).

VI. Affect, Reflection, and Memory

Repeatedly, participants in our LCD focus groups cited the unexpected, the unanticipated, and the humorous (the "Taking Tea" video was an animated cartoon that included examples of social *faux pas*) as factors that contribute to pleasurable museum experiences. The affective nature of the descriptors contributes to the possibility that these museum experiences will also be memorable (Schacter, 1996). Unexpectedly, one of the main effects of the videos was that they slowed down the process of meandering through the galleries (most visitors don't stop for more than a few seconds at specific works of art), and invited participants to become engaged with specific objects. "With the Japanese clothing, it showed how it was used, how it was worn; with the very last one, it showed how that mask opened up. I would never have picked up on what was going on with that if I hadn't seen the video. I wouldn't have been interested in the tea thing at all if it hadn't been for the video" (Minneapolis, 2003).

A major effect of object-specific media in the galleries, then, is *selection*, causing the visitor to focus his or her attention. *Attention* is a pre-condition of reflective thinking and, ultimately, of aesthetic experience. Reflective thinking is essentially *self-conscious* thinking, an internal dialogue about the thinking process itself. Schacter talks about the role of reflection in memory, noting that, "If we want to improve our chance of remembering an incident or learning a fact, we need to make sure that we carry out elaborative encoding by reflecting on the information and relating it to other things we already know…. What we already know shapes what we select and encode; things that are meaningful to us spontaneously elicit the kind of elaborations that promote later recall. Our memory systems are built so that we are likely to remember what is most important to us" (1996, p. 45). In the museum, if we want visitors to remember anything about the works of art they encounter, we need to promote and support reflective thinking about those works of art. As one focus group participant said, "You can do two things at once. You can look at the video, look at the object, put the two together, and make an experience…. It brings to life that object, which you appreciate" (Minneapolis, 2003).

VII. Future Directions

We know that the vast majority of our visitors are art novices (Stage 1 and 2 art learners), who, additionally, are visiting the museum for an uplifting social experience. They are not here to

pursue in-depth study of a particular subject. These visitors want to have the significance of individual objects called out to them, either by the presence of media or a host of other interpretive aids, and to learn just enough to have an "ah-ha" of broad understanding. This would be best accomplished if designers of exhibitions and interactive media understand what visitors are likely to know about the subject and "build structures that enable visitors to traverse the path from current knowledge and experience to hoped-for knowledge and experience" (Falk & Dierking, 1992, p. 137). This objective argues heavily for front-end evaluation of visitors' knowledge to determine those "hooks," in both content and design of interactive programs, that will be understood by and attractive to a Stage 1 or Stage 2 viewer.

New information can (and should) be related to existing knowledge in broad terms, as in the case of a discussion of the function of Japanese screens in "Arts of Asia," an excellent candidate for "unpacking" for presentation on an LCD right in the screens gallery. The setting is an animated interior of a traditional Japanese dwelling, where folding screens appear to serve as draft-stoppers or backdrops, and sliding doors divide the space for different social functions [Fig. 13]. Nearly all of our visitors live in roofed spaces, and are familiar with arranging furnishings, if not walls, for specific needs. Once this idea of the function of the screen has been established, the visitor is prepared to consider the particular painting on a screen and can appreciate the appropriateness of different subjects for different seasons, social occasions, and individual guests. Broad topics or themes are critical for a main menu even within the context of a larger interactive learning station program. Individual works of art are not useful as menu buttons for the average Stage 1 and Stage 2 viewer because those viewers will not have previous knowledge of them. Further, many thumbnails cannot be "read" without familiarity with the work of art they only abstractly represent.

Fig. 13: Screens and scrolls, Arts of Asia http://www.artsmia.org/arts-of-asia/japan/subjects/scrolls.cfm

Faced with a growing selection of hardware and installation possibilities for the museums' galleries, a critical conversation needs to take place about which information will be most helpful for our Stage 1 and 2 visitors (best presented in small segments in the galleries, next to selected works of art), and which information is more appropriately presented in a more complex study

tool (better located in reference rooms, as well as made available on the Web). There must be a clear understanding of the differences between our visitors' *computer literacy* and their *art knowledge* and *museum literacy*. Key word searches and interfaces made up of art historical terms will not be used effectively by most of the museum's visitors. Certainly, people can click and make choices and be surprised by what they may have (unintentionally) chosen, but they are unlikely to be able to reflect about the meaning of the information because they will have nothing in their previous knowledge to which they can connect it. Our visitors, like everyone else these days, value time more than anything and will make future choices about where to spend it based on perceptions of value. If the museum offered them a plethora of information they could not "use," that had no meaning for them, they are unlikely to return.

Interactive learning stations located throughout the museum, thematic programs available on the museum's two Web sites (www.artsmia.org and www.artsconnected.org), and online catalogues are all wonderful ways to serve learners who *do* have adequate prior knowledge, a working art vocabulary, and a few favorite areas about which they want to know more. But do such resources support looking at and reflecting about the real works of art in our galleries for most of our visitors? I believe that an honest answer to this question is, at best, that we don't really know. In the last decade this museum devoted enormous human and financial resources to using technology for information presentation. My hope is that in the next few years we will devote the same energy to serving the known needs of our Stage 1 and 2 visitors. In a sense, we, the museum staff responsible for producing interactive technologies, have been our own audience. To paraphrase Philip Yenawine, "Is the question that you are presenting the answer to YOUR question, or the visitor's question?"

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