Developing Interactive Exhibitions at the Smithsonian

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Preface

The Smithsonian system is unique in the number of specialists in different units who contribute to the exhibition process. Often they do not interrelate or even know one another. In December 2001, the Office of Policy and Analysis (OP&A) sponsored a one-day workshop on interactives. Participants, who represented diverse units, offered valuable lessons and suggestions to guide the future use of interactives. I cannot take credit for the idea of the workshop and gratefully acknowledge the contributions of the OP&A staff. I owe a special debt to Andrew Pekarik who facilitated the workshop and prepared this report. The participants who attended the workshop are central figures in the story we plan to tell in our major study of Smithsonian exhibitions. I thank them all for generously sharing their insights.

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Background

In recent years museum visitors have come to expect a high level of interactivity in museum exhibitions, especially non-art exhibitions. Although both children and adults are drawn to these interactives and make use of them, they tend to be thought of as child-oriented, and visitors take the presence of interactives in exhibitions as an indication that the museum welcomes and caters to children. More and more Smithsonian exhibitions include a significant number of interactive stations or displays. One of the most notable examples is the newly opened exhibition in the National Air and Space Museum, *Explore the Universe*, which contains 73 objects and more than two dozen interactives, and which is being well-received by visitors of all ages.

The possibilities for interactives are so open-ended that their conceptualization and design has not been standardized in practice. Relatively few museum specialists, exhibit departments or contract designers have extensive experience in producing effective interactives. Nonetheless, the Smithsonian, because of its broad base of exhibition-making capabilities, includes a number of staff who have successfully produced exhibition interactives and who are committed to expanding the presence of interactives in their future exhibitions.

As part of its study of exhibitions, the Office of Policy and Analysis (OP&A) investigated the possibilities for exhibition interactives at the Smithsonian by convening a workshop on interactives that gathered the insights and opinions of interested Smithsonian staff. The workshop provided an opportunity for fresh thinking about the methods of conceiving new interactives, as well as about the standards by which interactives should be assessed.

The all-day workshop, facilitated by OP&A, was held at the National Zoo's research center on December 4, 2001. Originally 34 Smithsonian staff members were invited and 31 agreed to participate. Participants included curators, researchers, educators, designers, audio-visual specialists and other staff with experience and interest in exhibitions and interactives. Invitees were given a written assignment in advance of the workshop. They were asked to briefly describe an interactive that they personally experienced and considered particularly fine. They were asked to describe one that they considered particularly poor. They were also asked to define an interactive, and to identify the issues that should be on a checklist or included in guidelines when moving an interactive from concept to design and production. (See Appendix D for a list of participants.)

OP&A categorized and analyzed the responses to the pre-workshop assignments, which are further condensed and presented in this report. During the workshop OP&A staff took notes on the general discussions and the two breakout sessions in which participants conceived new interactives in response to specific assignments. This report summarizes the general discussions and includes samples from the breakout sessions. It concludes with material on interactives derived from OP&A's research into exhibition practices.

Additional copies of this report can be obtained by visiting the OP&A website:
http://www.si.edu/opanda/reports.htm

Definition: What Is an Interactive?

The definitions provided by participants in advance of the workshop emphasized physical activities, outcomes, technology, and information.

<u>Emphasis on Physical Activity</u>
According to one participant "an interactive is an exhibition feature that encourages physical participation on the part of visitors. I don't consider audio or video devices to be interactive unless they are played on demand by visitor action."

Other participants emphasized that interactives go beyond seeing to involve other senses:
"Something that brings to the experience more than just visual information. An interactive can be touched, smelled, felt, heard, or manipulated in some way and provides some kind of information or invokes feelings that cannot be had by simply viewing a thing."

Some referred to an interactive as a "hands-on component" because that term conveys the physical and tactile engagement that they think is important. As a participant noted, "an interactive is an exhibit component that requires visitor involvement."

<u>Emphasis on Outcomes</u>
Some participants preferred to define interactives in terms of the ways that visitors are affected. For example, "anything that engages you and makes you wonder, think, get excited, and want to delve deeper to learn more."

The desired outcomes in these definitions tended to involve the idea of "engagement," as in "an interactive is a device that promotes further engagement with the exhibition subject matter, and thereby broadens the visitor's understanding and experience."

Information was also put forward as an intended result, as in "an interactive is an object or a device that offers information and choices that engage a viewer, stimulating thought and usually behavior as a response."

<u>Emphasis on Technology</u>
Some participants shaped their definitions in a way that suggests that the interactive is a computer program, as in "an interactive is an online or CD-ROM based environment that integrates audio, video, flash, visuals, and text in a way that allows the visitor to explore the material, using the mouse and keyboard to navigate in both a linear and an intuitive manner."

Those who took this approach stressed the importance of choice within the program. For example, "an interactive is a multi-sensory virtual presentation that allows visitors to freely navigate and experience information within interchangeable, dimensional, interdisciplinary and multimedia contexts."

Emphasis on Information

Although many definitions mention information, a few make it dominant, as in "an interactive is a tool that enables the user to manipulate information to match their interests."

In summary, we can bring all of these points together in a composite list of key features, as follows:

An interactive:
    Involves physical activity
        Engaging senses beyond sight
        Requiring visitor involvement
    Stimulates visitors intellectually and emotionally
        Promoting deeper involvement with the subject
        Providing information
    Sometimes is a computer program
        Offering freedom of navigation
        Allowing visitors to manipulate information to match their interests

Guidelines: How Should Exhibition Interactives Be Developed?

Participants were asked in advance of the workshop to provide a list of issues and guidelines to be considered in developing interactives. Their extensive, thoughtful replies allow us to construct a comprehensive checklist that can guide the design process. (The checklist is included with this report as Appendix A.) Although the items on this list came from more than 35 different people, they are consistent with one another and offer an important practical tool.

The key points embodied in the checklist can be summarized as follows:

Decide in Advance:
    Who is the interactive for?
    What is it intended to achieve?
    Is it the best way to accomplish a desired aim?
    How can it be designed to have multiple uses?
    How much will it cost?
    What are the implications for the overall exhibition plan?

During Design Development:
    Make sure you have content
        That supports the exhibition themes
        That will interest and appeal to the audience
        That provides more than just information

    Integrate the interactive design into the overall design process so that
        The interactive is integral to the exhibition
        It will work for audiences
        It is accessible

    Throughout the development process test prototypes with target audiences
        For appeal
        For ease of use
        For clarity of instructions
        For outcomes

    Ensure that the interactive will be reliable
        Easy to update
        Easy to repair
        Easy to maintain

After the Opening:
Evaluate the effectiveness of the interactive
Does it achieve its aims?
Is it meaningful for visitors?
Is it durable?

Evaluation: What Makes an Interactive Good or Bad?

In providing examples of good and bad interactives, workshop participants indirectly suggested criteria for evaluating interactives. These criteria include content, presentation/function, and outcome characteristics. The list is presented in Appendix B.

These responses can be summarized as follows:

Content in Interactives
      Should be interesting, relevant, provocative to visitors
      Should not be confusing, meaningless to visitors

Presentation in Interactives
      Should be attractive, intuitive, fun to use
      Should not be confusing, complicated, unattractive

Outcomes in Interactives
      Should attract visitors, engage imagination, link to the exhibition
      Should not be activity without a result, or take attention away from the exhibition

The Workshop

The all-day workshop included two general discussions and two breakout sessions. The first general discussion elaborated on the definitions of an interactive that invitees had provided in advance of the meeting. The discussion emphasized the ways that interactives could deepen the experience of the exhibition for visitors by providing exhibition creators with the means:
- To add more layers of content to the exhibition
- To experiment with visitors outside the usual boundaries
- To include humor and emotion
- To allow visitors many access points to the exhibition themes
- To engage multiple senses

The first breakout session was an exercise in inventing interactives by taking common events or experiences and imagining them as metaphors for exhibition interactives. Participants were asked to start with some kind of interaction (e.g., with people, animals, place, objects or ideas) and imagine what exhibition interactive would function in an analogous way. Each team was assigned one kind of interaction metaphor. For an example of how one group, starting with "activities," approached this task, see Appendix C.

> As a result of the presentation of each group's experience in the breakout session, it was generally agreed that interactivity should not be limited to discrete interactives, but that the ultimate aim of exhibition makers is to create <u>exhibitions</u> that are holistically interactive, that engage multiple senses, that are responsive, and that provide a rich, diverse experience. From this point of view, the exhibition itself can be regarded as a large, multi-part interactive, and the principles discussed in this report for creating and evaluating interactives should also be applied to exhibitions as a whole.

The second breakout session, led by James Volkert, Associate Director of NMAI, and an experienced exhibition designer, was more practical. Each group was given one object (a brick, a photograph of Dr. Friedman sorting birds at NMNH, a pebble with a Chinese character written on it, the word "greed," and a page from the OEMS fire protection program) and asked to develop 12 interactives around that object, three each for four approaches:
- Technologically based interactive
- Physically based interactive
- Information (knowledge) visitors bring with them
- The senses or skills visitors bring with them

For an example of the interactives devised by a group working with a pebble, see Appendix C.

In the follow-up discussion, James Volkert stressed that in creating exhibitions we always need to ask three questions:

1. What do we want people to know? (This is what we have to teach.)
2. What do people want to know?
3. What do we want people to feel?

The final group discussion raised the question of how those involved in making exhibitions across the Smithsonian could enhance their effectiveness. There was a widespread sense that this day of sharing ideas and engaging in creative exercises together had been a positive, regenerative event that reminded everyone of how much can be gained from working together with others across units. Many of the participants, although they have worked at the Smithsonian for years, had never met some of their counterparts in other units before this workshop.

As a group, the participants offered the following list of suggestions for improvements:

WHAT COULD HELP?
> Make an SI-wide commitment to interactivity in exhibitions
> Foster a climate of experimentation (vs. fear of extra expense)
> Resources for usability testing (someone other than the developer)
> More help in contracting
>> Flexibility of design-build contracts
>> Identification of required steps (e.g., captioning)
>> Sharing good examples regarding scope of work
>
> Stop the 'brain drain' by:
>> Holding internal workshops like this one
>> Conducting internal reviews of exhibitions across SI
>> Emphasizing the need for an institutional knowledge management base
>> Encouraging engagement of exhibition creators across SI
>
> Eliminate the disincentives to collaboration:
>> Unit competition
>> Considering collaboration a "drain" on unit resources
>
> Provide incentives for collaboration
>> Multi-unit products (exhibitions and interactives)
>> Internal grant funds for cooperative/innovative/interactive projects
>> Fund new idea research – "skunk works"
>> Create a sense of community

WHAT ARE THE OBSTACLES?
> No post-mortems after exhibitions are complete
> No discussions of failures
>> What are the common mistakes?

IDEAS FOR CHANGE
> How can we share the intellectual resources of SI staff like the creative power of this group?
>
> Could there be a bonus pool of funds to buy project help from inside SI?
>
> Could there be an SI interactive "SWAT" team serving all units?
>> Now it takes time, focus and knowing whom to call
>> Is there a central role?
>
> How do we bring others (accessibility, general counsel, contracts) into this discussion of how to generate change?
>> Can we establish a listserv for this group?

As is evident from these comments, there was a strong feeling among the group that it was possible and desirable to do more for visitors in exhibitions, not just by providing more interactives, or even by making whole exhibitions more interactive, but by arousing, fostering, engaging and rewarding the creative talent among Smithsonian staff.

Other Viewpoints

In the course of our research into exhibitions, the OP&A study team encountered numerous mentions of interactives in the secondary literature and in discussions with museum staff outside SI. These outside viewpoints agree with the substance of the issues raised by the workshop participants, and in some cases provide valuable additional resources.

Interviews with designers and museum staff

The OP&A study team has interviewed scores of designers and museum managers nationally and internationally. The topic of interactives came up mostly in connection with science exhibitions, where they are considered standard offerings. Interviewees who discussed the matter at length emphasized three main points:
- Testing, prototyping and evaluating interactives is essential
- Maintenance is a major concern
- Interactives are expensive

Planning for People in Museum Exhibitions

This book, written by Kathleen McLean and published by the Association of Science-Technology Centers in 1993, is an overview of the exhibit-making process, with special emphasis on the needs of visitors. Chapter 7 is devoted to "Participatory and Interactive Exhibits." McLean makes distinctions among the terms "interactive" (i.e., reciprocal action between visitor and exhibit), "hands-on" (i.e., allows touch but is not necessarily interactive), and "participatory" (i.e., emphasis on visitors' acts rather than the exhibit's ability to react). "Interactive exhibits," she writes, "are those in which visitors can conduct activities, gather evidence, select options, form conclusions, test skills, provide input, and actually alter a situation based on input." She notes that interactive exhibits began as early as 1889.

In discussing the planning process for interactive exhibits, McLean emphasizes the following:
- Being attentive to all aspects of the visitor's experience
- Having a clear concept
- Devising an activity that reinforces the concept
- Providing physical cues
- Offering clear directions, precise activities, and understandable results
- Supplying adequate feedback to the visitor who uses the interactive
- Iterative testing of mockups and prototypes
- Designing for ease of maintenance and repair
- Incorporating clear environmental signals

British Interactive Group

The British Interactive Group is a membership organization of individuals involved in all aspects of hands-on exhibitions and activities. It includes exhibit developers, artists, educators, managers, evaluators and others involved in hands-on communication. Its website (http://www.big.uk.com) is an extremely valuable resource. It generously posts the complete contents of its newsletters from 1995 through 1999 and one issue per year in 2000 through 2002.

The newsletters include excellent articles such as "Everything We Currently Know About Making Visitor-Friendly Mechanical Interactives Or 28 Painful Lessons Learnt" by Ben Gammon (August 1999), which addresses interface design in a way that clearly reflects valuable first-hand experience. A small sampling of his points includes:

- Visitors will try their very best to do things in the wrong order
- Visitors don't look up
- If they possibly can, visitors will not read labels
- Visitors rarely see the beginning of a video presentation
- Don't make assumptions – visitors do weird things in museums

The British Interactive Group website includes a few theoretical articles, but is strongest in practical advice, such as their exhibit development guidelines, (which emphasize safety, contracting, and project management), and "Exhibit Building Secrets," compiled by Ian Simmons. Many of the ideas are similar to those raised in the Smithsonian workshop, but also include much more practical points, such as,

- An exhibit must respond immediately
- People tend not to steal things
- Sometimes, anchoring items indicates they are of special value
- Users treat delicate-looking exhibits with more respect

The website even includes a list of "Exhibit Aphorisms" collected by Harry White, such as:
Making easy exhibits is difficult.
Making easy exhibits difficult is easy.

Interactive Science Ltd

Another interesting web resource in Britain is this website of Ian Russell, (http://www.interactives.co.uk), a contractor specializing in mechanical interactives. Russell's website includes commentary on his projects and copious photographs. Particularly interesting is an article on "The Big Idea", an inventor center at the site of Alfred Nobel's dynamite factory (http://www.interactives.co.uk/minds_bigidea.htm).

Tech Museum of Innovation

This major science museum in the Silicon Valley is deeply committed to interactive exhibits and has made its processes, policies, visitor research, and exhibit evaluations available on the internet in a section called "Resources for Museum Professionals Online" (http://www.thetech.org/rmpo2/). Of particular interest is their data on interactive maintenance. They aim to have no more than 5% of interactives broken at one time, and have experimented with different tactics for avoiding visitor disappointment when exhibits are broken, such as:

- Removing signs, buttons, and controls
- Presenting engaging programs in front of the broken exhibit
- Turning the broken exhibit into a learning experience
- Training staff to guide disappointed visitors to other, comparable experiences
- Offering extra programming

The Tech Museum's guidelines for text, graphics, and multimedia interfaces are also interesting, as is their list, "Components of a Compelling Experience":

- Defined: Can you describe it?
- Fresh: Does it startle, amaze, amuse?
- Accessible: Can you get it to do what you want?
- Immersive: Can you lose yourself in it?
- Significant: Does it make you remember?
- Transformative: Do you feel different?

Archives & Museum Informatics

Computer technology is the focus of Archives & Museum Informatics, which organizes conferences, workshops and seminars, publishes journals and monographs, and consults for archives and museums. Many of the papers presented at its annual conference on "Museums and the Web" are available on their website (http://www.archimuse.com/). This is a good place to find out what is possible with interactive web technology.

Centres for Curiosity and Imagination

A useful resource for the latest research and theory on learning in interactive and object-based environments is the research digest on the website of Centres for Curiosity and Imagination, an association promoting the development of children's discovery centers in Britain (http://www.centresforcuriosity.org.uk/digest.htm). The digest includes an annotated bibliography of research on learning from interactive exhibits, the role of play in learning, and evaluation methods.

The Museum Learning Collaborative

The most extensive annotated bibliography of museum learning research on the internet is the work of the Museum Learning Collaborative (MLC), whose homepage address is http://mlc.lrdc.pitt.edu/default.html. The collaborative is a project of the Learning Research and Development Center at the University of Pittsburgh and is jointly funded by the IMLS, NEH, NEA and NSF and is aimed at advancing research into learning in museums. Annotations in the bibliography are lengthy and sometimes critical. There are over 2500 records in the bibliography, of which over 60 annotated entries refer to interactives (http://mlc.lrdc.pitt.edu/Annotatedlit.html). The MLC also offers on its website the full text of the articles produced by its researchers (http://mlc.lrdc.pitt.edu/paperresearch.html). Because the methods used by the collaborative rely heavily on videotapes and recorded conversations of visitors in the galleries, the MLC research reports provide interesting insights into how some interactives are used. See for example, the article by Kevin Crowley, et al., "Shared Scientific Thinking in Everyday Parent-Child Activity," which emphasizes the impact of parental involvement on children's use of a zoetrope (http://mlc.lrdc.pitt.edu/crowley6.pdf).

Appendix A
Checklist of Issues in Developing Exhibition Interactives

Overview Issues

AUDIENCE

Who is the target audience(s) for the interactive?

Is it appropriate for the exhibition's intended audience?

What is the audience looking for (entertainment, education, information, emotion, imagination, etc.)?

Is the interactive likely to appeal to your visitors?

Has the content of the interactive been tested with the target audience(s) for interest?

How computer savvy is your audience (ease of use issues)?

Will it engage and excite a wide range of visitors?

Will the visitor be apt to tell others about it?

Will the visitor want to come back to experience the interactive again?

Does it have flexible outcomes for repeat visitors?

OBJECTIVES

Are there clear objectives for the interactive?

What is the intent or desired outcome of the interactive?

What kinds of experiences does the interactive encourage? (e.g., learning, imagination, memory, etc.)

If learning is one, what is the educational goal of the interactive?

What kind of meaning will it have for users?

Are the goals for the interactive part of an overall interpretive strategy in the exhibition?

Do they directly relate to the concept and goals of the exhibition?

Is it really answering a need or adding to an exhibition in a meaningful way?

Is the point of the interactive reinforced in the exhibition?

How does the interactive relate to the exhibition experience?

ALTERNATIVES

Is this concept/experience best presented using an interactive?

What is the best way to 'illustrate' this concept? (image, text, audio visual, interactive, etc.)

Does the goal warrant the expense, time, and effort of developing an interactive?

Will it be worth the visitors' time and effort to use it?

Is the chosen method the most appropriate means?

Does the interactive convey information or experience in a new way that is useful and meaningful?

What kind of interactive best fits the need -- low-tech or high-tech?

EFFICIENCY

Can this interactive be used for other purposes? Could it go on the web?

Could the data be in a central database and used by other applications/interactives/resources?

Could the computer interactive be sold on a CD-ROM?

Is the interactive one aspect of a multi-part project (exhibition, book, lecture series, films, etc.)?

Will work be contracted? If so, are design, prototyping and building included in one contract?

Is there a clear scope of work and an experienced COTR?

BUDGET

What is the estimated cost in staff time and dollars?

Is money included for several stages of prototyping with visitors?

Is money included for repair/maintenance?

Is the cost of measuring outcomes a part of the budget?

Are all appropriate staff members involved in estimating cost? (curators, exhibitions staff, tech staff, etc.)

IMPLICATIONS

Is there enough time, money and expertise to do this?

If so, is the result worth the cost?

If so, how will the development affect the budget and schedule of the exhibition?

Have participating staff made realistic commitments?

Development of Content and Design

CONTENT

Is this interactive technology-driven rather than content-driven or experience-driven?

What are the main experiences/ideas the interactive is going to present/teach?

Is this the content best suited to the device?

Does the content fit into, enhance and support the central aims/themes of the exhibit?

Is the content extraneous?

What is the scope of the content (should be narrow, could be layered if necessary)?

Is there a good match between the content and the technology?

The interactive shouldn't be exclusively informational or "educational" but should have a mix of intended outcomes.

INFORMATION

Does the informational content meet necessary educational standards?

How much information will fit in this interactive?

Is it fundamentally educational or just entertaining?

How does this interactive relate to object experiences in the exhibition?

Is the use of interactives consistent throughout the exhibition?

Is all information in the interactive accurate?

CONTENT AND AUDIENCE

Is the interactive directed to more than one target audience?

If so, does it have multiple layers for multiple audiences?

Is there a specific content and point of engagement for each designated audience?

Should instructions be given in multiple languages or also in non-text form?

What does the visitor "walk away" with?

Can you convey what you want if the visitors' attention span is 1-3 minutes?

DESIGN AND THE EXHIBITION

Is the development of interactives an integral part of the exhibit design process, not an add-on?

How will the interactive be integrated within the exhibition context?

Where will the interactive be located in the exhibition or public space?

What is the relationship of the interactive's purpose to the artifacts/objects in the exhibition?

Does the exhibition design encourage the use of the interactive?

DESIGN OF COMPUTER INTERACTIVES

Are options carefully selected?

Are developers working on the target software platform?

If available on internet, what platforms will be used to visit the site?

Will the program allow multiple paths to desired outcomes?

Does the interactive have the capability of providing statistics on its use by visitors?

DESIGN AND THE AUDIENCE

What are the designer's expectations for the experience of the interactive?

What are the likely visitor expectations for the experience of the interactive?

What are the cues that trigger those expectations in visitors?

How does the interactive fit into the flow of the visit experience?

Will multiple interactives build on or complement each other?

How long will each visitor use the interactive?

How easy is it for a visitor to figure out how to use the interactive?

Is it immediately intuitive how to interact with it?

How much of that instruction can be built into the design rather than text?

Is it easy to operate and understand?

If computer-based, is it easy to navigate?

How many visitors can it accommodate?

Does it encourage experiences with other visitors, either in the group or outside it?

Can visitors get the outcome by observation or do they need to work the interactive themselves?

How can users be creative with this program/interactive?

Can the activity be accomplished quickly?

ACCESSIBILITY

How are accessibility considerations being accommodated?

Are mental and physical accessibility both being considered?

What learning levels/styles are being accommodated?

Have educators been involved to help with age appropriateness and learning styles?

Does it accommodate people whose first language is not English?

Have all ADA guidelines been factored into the design?

Does the interactive offer diverse intellectual "entry points?"

TESTING

Has adequate prototype testing been worked into the schedule and budget?

Will testing include all target audiences?

Will testing be done by outside parties who are not on the exhibition team?

Has a prototype been tested for ease of use?

Has the prototype been tested for level of appeal?

Has a prototype been tested for intuitive navigation/instructions?

Has a prototype been tested for clarity of instructions?

Has a prototype been tested for outcomes?

Has a prototype been tested for accessibility?

Was the interface tested at every stage of development with the projected audience?

Has time/money been allowed to correct deficiencies discovered during testing?

INTERNAL EVALUATION

Avoid media overload.

Keep the concept SIMPLE. Make sure the design is produced for use.

What is the image /sound quality?

How complex are the graphics?

Is the interactive attractive?

Is it multisensory?

Is it beautiful? Does it fit the aesthetic of the exhibition?

Is it compelling?

Does it inspire further exploration?

Does the user control their experience and still come away with the intended learning experience?

Does it engage multiple senses simultaneously, including the imagination?

Planning for the future

LONGEVITY

How long will the interactive be relevant?

Will the interactive need to be updated, and how will this be accomplished?

How often will it need to be upgraded?

Can it be recycled somehow or used elsewhere?

MAINTENANCE

How will the interactive hold up to audience use and abuse?

How reliable is it? Was it designed to be low maintenance?

How easy is it to maintain? What's the turn-around time?

Is it easy to repair?

What is required for set-up?

What re-set times are required?

Don't use proprietary software or difficult to maintain hardware.

Is there someone who can check it on a day-to-day basis?

Who will be responsible for keeping it working?

Is it durable?

If it involves touch, is it extremely sturdy?

Can it be easily broken or removed by visitors?

Can it be easily extracted from the exhibition for repair/maintenance?

Measuring Outcomes

Are there mechanisms for evaluating the effectiveness of the device?

Were the goals of the interactive achieved?

How predictable is the visitor outcome of an engagement with this interactive?

Does accomplishing the interactive add to the visitors' experience in a positive way?

Is it educationally effective?

Is it really meaningful to visitors or is it just "gee whiz?"

Do visitors consider the interactive a quality presentation?

What percentage of the time is it not available to visitors due to malfunctions?

Appendix B
Positive and Negative Characteristics of Interactives

Content features:
Excellent in-depth information
Text short and snappy
Provocative questions
Rich, fascinating and respectful to all
Fascinating range of footage/imagery with sound
Effective use of metaphor

Content problems:
No information beyond what's on the labels
Confusing, complicated message
Not thought-provoking
Poses questions that are not the visitors' questions
Meaningless
No clear link of the activity to outcome or information
Exercises are forced and don't engage the target audience
Questions that settle for yes/no or multiple choice answers

Presentational/Functional features:
Useful and engaging format
User-friendly navigation system
Well-designed, filled with high-quality visuals
Visually appealing and stimulating
Easy to use
Nicely integrated into visitor experience and movement
Have a beginning, middle and end
Very simple, robust

No instructions required – operation immediately intuitive
Playful design
An excellent tool to view the collection
Fun to use
Beautiful

Presentational/functional problems:
Complex, dense and confusing
Confusing information layout, thus user leaves it
Unattractive design
 "Cookie-cutter" design – too bland and not memorable
Hard to read
Not interactive enough
Difficult to find a pathway in it
Too sophisticated, requires almost hourly technical attention
Complicated to use
Experiences overpower one another
Poor location
Takes too long for something to happen; appears broken
Broken
Sluggish

Outcome features:
Visitors got the point of the exhibit
Leads to curiosity and further engagement with the subject
Visitors recounted it as a good experience
Rewards you with a direct link to the exhibit
Led visitors to read the text
Engaging, experiential
Engages one's imagination
Attracts visitors

Outcome problems:
Activity without a real result or reason
Pushing a button encourages hyperactivity
Payoff doesn't match the hype
Takes attention away from the exhibits
Does not enhance the exhibits
Sensory overload
Inadequate payoff

Outcome features:
Popular with visitors
Visitors learn, make choices about important things
Allows visitors to learn more about the items
Insight into the object without overpowering it
Clearly and quickly demonstrates how the artist works
Bridges the gap between physical and online visitors
Interesting to listen to, click through, and watch
Enjoy watching others do it
Allows a range of responses
Helps users formulate their own responses

Appendix C
Examples from the Breakout Sessions

Exercise 1: Invent interactives by taking common events or experiences and imagining them as metaphors for exhibition interactives.

   Activities. Our thoughts veered toward the large scale, covering exhibits or even whole museums.

   Games. They have a set of rules but with choices, chance, flexibility, and involving intuition. You could use this to guide a child through a museum. This would make it fun, accessible. This could take the form of a treasure hunt, a "search list," or the like. One negative about a game is that in some games, there is a winner and a loser.

   Handshake/Eye contact. This creates a personal connection or experience, which could be between the visitor and an object. Eye contact (e.g., panel lights or something when viewed) is the first step, then create additional layers of intimacy (adding more information).

   Personal relationship. This is a more developed form of the handshake. Once you make a connection, develop it into a personal relationship, with the ultimate goal of a "marriage" of the visitor with the object, idea, etc.

   Dancing. This can be a brief, creative solo or a group activity. Each participant is equally active in the dance. Example: Mass MOCA had an exhibit in which participants could play a game with beans, moving them around a large board. Their actions on the board were recorded by an overhead camera and projected onto a wall for all visitors to view. This created a theatrical 'dance' of various people's hand gestures.

   Parties. This is a social activity, which may be centered in one particular room or multiple rooms, with different themes or 'feel' depending on those attending. Parties can create anxiety, just as group interactives can create anxiety in an exhibition.

   Factories. Moving from department to department, with a complete 'thing' at the end of the experience. Example: different body systems, one by one, leading up to the entire human body.

   Gift giving. Create a 'take home' experience. Such as the Holocaust museum booklets, or the Xu Bing calligraphy projects at the Sackler Gallery.

   Banquet. Offer plates of 'tidbits' (information or visual experiences) from which the visitor can pick and chose from. These must be well-researched, complementary bits that form a whole. One can mix different foods, and there

is something for everyone (the vegan, the chef, the meat eater). You can even indulge, and have a Thanksgiving-like meal. The norm would be to have enough to be satisfied, but without 'over-eating.'

Chemistry Set.   Similar to the banquet, but on a more basic, smaller 'unit' level (of information or topics).

Juke Box.   Again, you can pick and chose, but this is more of a group activity and there is a serendipitous result. You never know when the 'song' you pick will come up.

Shopping.   You can fill your basket as you go. There are tactile and visual experiences. Shopping doesn't have to be just buying; it creates a sense of wonder, and imagination.

What is the goal or purpose of these interactives?
The ultimate goal of all the above is not simply to present information or objects to a visitor, but more basically, to create a synthesized positive associative experience. This should include:
- pleasure,
- fun,
- a sense of wonder, and
- curiosity.

These elements are pre-conditions for learning and 'making connections.' Once the positive experience is created, hopefully visitors will feel <u>connected</u> and interested in what they saw. They may even:
- continue to think about the experience (and content) after the visit,
- return to the topic again and again,
- look up more about astronomy, or even
- keep the TV tuned to the Discovery Channel or Animal Planet a bit longer.

Exercise 2: Develop 12 interactives around a given object, three each for four approaches:
- Technologically based interactive
- Physically based interactive
- Information (knowledge) visitors bring with them
- The senses or skills visitors bring with them

Below is the summary of the results from the team that worked with the pebble. The Chinese character for "see" was written on the stone in the 12th century in Japan as part of a

transcription of a Buddhist sutra (a record of the teachings of the Buddha). Each word of the sutra was written on a pebble. The group of pebbles was buried as a symbolic way of preserving the teachings.

Topic: A Japanese sutra stone with Chinese character.

Technologically based interactive:
- Ask what one object you would save from your family if you had to leave your home quickly? Draw a picture of it on the computer kiosk.
- What would you choose to tell someone about yourself 800 years from now?   Put it on a pebble in our digital time capsule.
- What is a sutra? Who is the Buddha? Where is Japan? What is a Chinese character? Answers in a video or computer interactive
- Audio-visual of stone-owner telling its story.

Physically based interactive
- Pick a stone from our collection, write a sutra word on it, and add it to our collection.
- Make your own symbol for 'to see' and put it on a stone.
- Select from stones inscribed with English words and make your own sutra 'sentence.'
- Get a sutra stone in the exhibition that you can take home with you, one you've learned the meaning of during your visit.

The information (knowledge) visitors bring with them
- What are other ways spiritual signs were hidden during times of stress? Examples: Slave quilts, Hindu bronzes, Christian catacombs, African museum Buddhas.
- Who wrote these sutras? Lay people, women, monks, nuns?
- What was 'going on' in 12th century Japan? What were peoples' lives like?

The senses or skills visitors bring with them
- Have Chinese calligraphy lessons
- Put the sutra back together (characters on different pebbles)
- How does something common become precious? What makes it sacred?

Appendix D
List of Participants

Participants (who attended the workshop and/or completed the pre-workshop assignment):

Frederica Adelman	SITES	Gretchen Jennings	NMAH
Amy Bartow-Melia	NMAH	Lynn Kawaratani	OEC
Ann Carper	OEC	Alan Knezevich	NMAfA
Ed DeCarbo	NMAfA	Claire Larkin	SAAM
Debra Diamond	FSG	Carolyn Margolis	NMNH
Lynn Dolnick	NZP	Anne-Louise Marquis	HMSG
Stephen Estrada	NASM	Nancy McCoy	NMAH
Jeana Foley	IAMD	Virginia Mecklenberg	SAAM
Karen Fort	NMAI	Howard Morrison	NMAH
Matou Goodwin	SITES	Beatrice Mowry	NASM
John Gordy	FSG	Ann Rossilli	NMAH
Judith Gradwohl	NMAH	Kathy Suter	NMAI
Nancy Groce	Folklife	Jim Volkert	NMAI
Amy Henderson	NPG	Ray Williams	FSG
Monika Holland	NZP	John Zelenik	SAAM