AASLH
TECHNICAL LEAFLET BUNDLE
A PUBLICATION OF THE AMERICAN ASSOCIATION FOR STATE AND LOCAL HISTORY

Exhibit Planning

BUNDLE 006

Putting together a quality exhibit can be an intimidating task. This bundle includes leaflets that illustrate different approaches to planning and constructing exhibits. They address a variety of issues including how to approach artifact selection, create engaging and age-appropriate content, and conduct audience evaluations. The leaflets in this bundle provide a valuable overview of exhibit planning with bibliographies that will point you to other resources that will help make your exhibit a success.

TL 137 – Planning Exhibits: From Concept to Opening (1981)
TL 204 – Charting the Impact of Museum Exhibitions and Programs (1999)
TL 215 – Exhibit Conservation: Strategies for Producing a Preservation-Responsible Exhibition (2001)
TL 240 – Telling a Story in 100 Words: Effective Label Copy (2007)
TL 245 – Families First! Rethinking Exhibits to Engage All Ages (2009)
TL 249 – Exhibit Makeovers: DIY Exhibit Planning (2010)

This bundle may help institutions achieve the standards as set forth under the Audience, Interpretation, and Stewardship of Collections sections of the AASLH StEPs program.

American Association for State and Local History

Technical
LEAFLET

Planning Exhibits: From Concept to Opening

By Charles L. Baker
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As exhibits become more effective in interpretation, sophisticated in use of materials, and attentive to conservation requirements, complexity and cost may increase. Rising labor and materials costs, coupled with the museum's mandate to reach the visitor with the most effective presentation possible, underscore the need to understand and make maximum use of the exhibit process for cost-effective planning and production.

Even though each exhibit is unique, the production of an exhibit results from a specific sequence of events. This process may be formalized and structured in a large multi-departmental institution, or left somewhat informal and intuitive in a small organization with a paid staff of only one or two.

Four sequential steps—planning, scheduling, development, and production—ensure orderly fabrication. And, as a rule, the more time spent in the first three areas, the more cost- and time-efficient the production phase of the process will be.

Keep in mind that the size, budget, complexity, and other resources and limitations of an institution may alter the number, nature, and complexity of the elements that must be coordinated, but that the basic process remains the same.

Planning

Intelligent, cost-effective exhibit planning is difficult without institutional and programmatic objectives as a base. The institution needs stated objectives at both the philosophical and functional levels. Setting these objectives should be an initial and primary function of an institution's governing body.

In the development of institutional and programmatic objectives, an analysis of the audience to be served should be included. An organization cannot know too much about those visitors with whom it attempts to communicate. Prior to commitment to an exhibit, study the particular audience that the exhibit is supposed to reach.

Preplanning Work Sheet

Exhibit title: _____

Purpose (theme, message): _____

Compatible with institutional goals? Yes _____ No _____

Compatible with exhibit program goals? Yes _____ No _____

Target audience: _____

Audience analysis: _____

Educational objectives: _____

Questions the viewer should be able to answer AFTER the exhibit experience: _____

_____

Why is an exhibit the most effective medium to use to convey the theme and meet educational objectives?

_____

Resources	**Availability**	
Time to complete project	Yes _____	No _____
Budget (need cost estimate or set figure)	Yes _____	No _____
Objects (need list of required objects for exhibit)	Yes _____	No _____
Support material (A/V, maps, photos, etc.)	Yes _____	No _____
People (staff or volunteers)	Yes _____	No _____
Storage for objects available in collections	Yes _____	No _____
Storage (workspace, construction materials)	Yes _____	No _____
Exhibit space (square footage)	Yes _____	No _____
Other physical constraints	Yes _____	No _____

The items listed on this worksheet are applicable to the preplanning of all exhibits, regardless of the size or the type of museum involved.

Evaluate the initial concept for an exhibit in terms of the institutional philosophy. Then examine the specific purpose of the exhibit in light of the exhibit program goals. An exhibit of the Lunar VI recovery vehicle may be compatible with a science museum's objectives, but a cost of $60 thousand and a 3,000-square-foot space requirement is not compatible with an exhibit master plan that calls for a budget of $3 thousand and a 2,000-square-foot exhibit space.

Once a concept that reflects both the institutional and programmatic objectives is established, evaluate the specific exhibit goals in regard to the resources available. If resources are assessed as inadequate, you must either set other exhibit objectives or obtain additional resources before proceeding further.

Suppose a children's museum wants to do a permanent exhibit on community history as it relates to school curricula for the primary grades. Resource analysis indicates that the museum has thirteen artifacts relating to local community history, 1,500-square-feet of available space, and a construction budget of $4,500. The museum should explore the options of obtaining artifacts on loan from other museums, securing a grant or donation of funds to acquire additional artifacts, and, last but not least, constructing a smaller exhibit with the artifacts it has in a smaller space. Upon investigation, if none of the options prove

viable, the museum should put the exhibit on the shelf until resources become available.

Until the planning process becomes automatic, or when formalization of the plan is desired, use the worksheet, opposite page, as a model for evaluating the effectiveness of your preplanning. The items on the worksheet are relevant to all exhibits, regardless of the size or type of museum involved.

Scheduling

Scheduling allocates and coordinates the production of the exhibit so that it opens on time. Before setting up the schedule, identify the various elements, conditions, and needs that determine the amount of time necessary.

The completed planning process should define the total amount of time available for scheduling and production, as well as for public use of the exhibit, and the available budget. Analysis of proposed presentation methods and needed materials and equipment, along with consideration of in-house or out-of-house production and labor skills, should identify specific activities necessary to produce the exhibit. Distribute the time and monies as required, arranging the activities in sequence, and assigning a length of time necessary to complete each one. The sum of the calculated time for each activity, along with an additional time allowance to deal with the unexpected, results in the production schedule.

You can go to great lengths in production scheduling—and some projects require it—but if elaborate planning documents are not needed, don't spend time on them. Most exhibits can be scheduled adequately using the following eleven-step checklist:

Exhibit Check List

Title _____ *Opening date* _____

Activity	*Due by*	*Assigned to*
Topic Research		
Exhibit Story Line		
Artifact Selection		
Layout/Traffic Flow		
Working Drawings		
Materials/Supplies		
Label Copy		
Graphics		
Object Installation		
Label Installation		
Clean Up		

The Production Schedule

To develop a sample production schedule, list all of the activities a familiar project requires. Specify who is responsible for each activity and how much time is needed for its completion. For example, the distribution of a newsletter actually involves four steps: production of the mailing list, addressing the newsletters, sorting by zip code, and mailing, which includes processing necessary departmental and postal forms. Part of the production schedule will read: sorting newsletters by zip—two-thousand copies, two days, one person. Use this basic procedure for more elaborate projects.

List each activity and the time it requires on file folder labels or a similar small adhesive-backed surface. Arrange the labels in sequence in vertical columns under the department or persons responsible for the tasks. Then paste the columns of activities on a piece of paper in an overall sequence from first to last, running from top to bottom of the page. Indicate visually the time allotted for each task by allowing more space for longer activities. This type of production schedule is shown on the next page. Note that the forty-four-week total time is sequential, and that not all operations are assigned a time. This is because the activities of the collections and research departments are concurrent with those of the exhibition department. Note also that the start-up time coincides with the concept approval.

Next, relate "project" time to "real" or calendar time. Set the target date—the opening of the exhibit—on the calendar. This is "zero" day or the day the public first has access to your activity. Total the project time and count backwards from day "zero." If you find that you do not have enough time to complete the project, obviously you must reconsider either the opening date or the project itself. Once an acceptable target date is set, move from the bottom of the paper to the top and establish start and due dates for each activity. Indicate these on the calendar in the way most helpful to you.

Certain activities depend upon other sequences of actions. Note these critical steps and allow a cushion of time between their projected completion and the start of other activities dependent upon them. Also be aware that the same person may have overlapping responsibilities, and schedule accordingly.

Distribute a written list of activities, starting dates, and due dates to all relevant persons or departments. Such communication helps everyone involved understand the nature of their responsibilities in the overall project.

Exhibit Production Schedule

Research	Collections	Exhibits	Museum Director	
		Exhibit Proposal		
Topical Research				
	Collections Research			
			Concept Approval	1 week
		Story Line Development Concept Sketch Development		4 weeks
			Story Line Approval Concept Sketch Approval	1 week
Graphics Research Artifact Research				2 weeks
	Artifact Selection Graphics Selection			4 weeks
Headline Copy			Artifact Approval Graphics Approval	1 week
Body Copy		Exhibit Layout/Design Detail Elevations Production Working Drawing Production		6 weeks
			Working Plans Approval	1 week
		Material Specification		4 weeks
		Material Production		2 weeks
	Artifact Acquisition Graphics Acquisition		Material Purchase Approval	2 weeks
			Label Test Approval	1 week
	Graphics Restoration Artifact Restoration Artifact Preparation	Label Production Graphic Arts Production Exhibit Frame-In Exhibit Electrical Installation Wall Treatments Security System Installation Interior Case Work		8 weeks
		Finish Carpentry Graphics Installation		1 week
	Artifact Installation			4 weeks
		Label Installation Glazing Final Clean Up		2 weeks
				Total Time: 44 weeks

This sample exhibit production schedule indicates sequentially who is responsible for each activity and the time allotted for its completion.

How you record and communicate your schedule to others must be convenient for you and readily understood by the staff. One such method is simply to indicate on a calendar that, for example, production of labels will begin on Monday the sixth and should be completed by Friday the seventeenth. A dated checklist indicating each activity and the due date for each may be sufficient. Or, you may list activities sequentially:

Activity	Who	Start	Complete
Prepare labels	Sue	May 2	June 12
Strip Gallery	Sam	May 18	June 23
Paint Gallery	Tom	May 25	June 28

An assignment calendar shows more clearly how activities overlap. This type of calendar also can be a personnel schedule and is particularly useful if a staff member is responsible for more than one task.

The following activities, listed by general area of production responsibility, may require attention in the scheduling process:

- *Exhibits:* exhibit concept, exhibit proposal, story line, concept sketches, layout/traffic flow diagrams, detail elevations, working drawings, materials specifications, purchasing, label and graphic arts production, exhibit construction (framing, electrical casework, etc.), security system installation.
- *Curator of research:* topical research, collection research for graphics and artifacts, label and catalog writing.
- *Collections:* object/graphic research, acquisition, control or location, restoration, preparation for display.
- *Fabrication:* lighting, graphic arts, label, and artifact installation and clean-up.
- *Public relations:* exhibit synopsis, in-process photos, object photos, press release copy, invitations to and plans for opening.

Exhibit Development

As a rule, most exhibit parameters—requirements that limit and define the scope of the exhibit—are identified generally in the planning process. What story will the exhibit tell? Which objects best tell the story and how many are to be displayed? Is the exhibit audience to include the blind? The deaf? How many square feet can the exhibit occupy? How much money is available? How much time? These parameters must be set before the development and design process begins. As plans develop, these parameters are expressed more definitely. Provide quantitative and qualitative answers that will fulfill the requirements.

Make sure that available funds address all needs: labor, materials, transportation, insurance, equipment, rentals, and maintenance. If plans call for a long-term exhibit, include allocations for replacement of equipment such as lamps and back-up audio-visual units. Related costs include printing brochures, pamphlets, and labels and artifact cleaning, restoration, and preparation.

The Story Line

An outline of the exhibit content, or script, is critical for further development. The story line of the exhibit must express the exhibit's interpretive content, with a parallel listing of the objects involved. This is the time to note that the elephant's foot ashtray weighs 300 pounds, and that bugs have eaten away part of the circa 1867 carpetbag and it shouldn't be viewed from both sides.

The outline should address the educational objectives of the exhibit, include suggestions for visitor involvement and text for the introductory and summary panels, and suggest major sub-theme topics. Such an outline is necessary for the effective interpretation of the artifacts. Ask these questions:

- Does the introductory statement include concepts that are prerequisite to understanding this exhibit?
- Is the exhibit content organized with a clear internal organization and a logical beginning and ending?
- Have the visitor's learning requirements been considered as well as the subject matter?

With a defined budget, a content outline, and spacial and physical specifications set, the physical design of the exhibit can begin.

Exhibit Design

Determine whether the traffic pattern will be open or lineal. A lineal format translates the story line literally and requires that the visitor follow a predetermined sequence of events to reach a conclusion. An open format depends on a grouping of sub-themes around a general thematic area. This pattern requires breaking the story line into major areas with their subordinate information, though each area remains related to the major theme. The open format may allow a richer visual environment and thus a more exciting exhibit.

Regardless of the type of traffic pattern, a "white model," or a scale model of the exhibit

space, is an invaluable aid in visualizing the functions of the completed exhibit. A model constructed on a scale of ¼ inch to 1 foot defines the space, offering a three-dimensional view of the exhibit area before actual construction begins. Color schemes, object and case placement, and traffic patterns can be altered in minutes with no cost. This eliminates costly or embarrassing errors which otherwise would not be apparent until full-sized fabrication is complete.

Even though parameters differ, the following general guidelines for design can be applied to most exhibits.

Traffic flow:
Is the general flow of visitors from left to right?
Is there a continuity of flow?
Has allowance been made for the movements of groups as well as for single visitors?
Has the space available for visitors been maximized?
Has grouping-space allowance been made for the visitors at existing exits and entrances?
Have barrier-free design considerations for all visitors been taken into account?
Have all applicable building codes been reviewed?

Spatial arrangement:
Has the exhibit been given an overall identity? That is, does the exhibit reflect its theme?
Is the architectural environment for the exhibits appropriate?
Is the design consistent throughout the exhibit?
Is the design consistent with an overall view of the subtheme?
Is structural flexibility required? If so, can the exhibit easily be modified or elements of the exhibit replaced?
Is the medium chosen for each exhibit subject area appropriate to its message?
Is the medium cost-effective?
Are seating or resting areas required throughout the exhibit?
Is the object/background relationship clear?
Have all of these items been considered: lighting levels (set with a foot-candle meter), temperature, humidity, acoustics, ventilation, ceiling height, access to space, fire protection, and maintenance of exhibit?
Are exhibits secure?

Graphic arrangement:
Is the design consistent within the exhibit?
Are different major exhibit areas identified properly?
Is the exhibit properly identified outside of the exhibit area?
Have information and directional signs outside the exhibit been considered carefully and the problems solved?
Do the graphic techniques allow for or require change and maintenance?
Is the text type style(s) appropriate?
Is the type style for each graphic usage large enough to be read easily by all visitors?
Does the background interfere with the legibility of the captions?
Are captions clearly related to the material being discussed?
Have all credits been checked carefully and listed?
Have safety and code-required graphics such as fire exits been incorporated into the museum?

Installing the Exhibit

All too often, protection of the object is sacrificed for the aesthetic requirements of exhibition design. While curators of exhibits, exhibit designers, and conservators may never be in complete accord, installation guidelines and procedures can ensure the protection of the objects while permitting some aesthetic freedom. Such procedures and guidelines, however, do not relieve the exhibit designer of the responsibility of addressing each object in terms of its special mounting requirements.

Consider the following guidelines for installation, keeping in mind that they should be revised according to the needs of the objects.

- The mount system must distribute the weight of the object so that there is no point of stress on the structure or the surface of the object. Use cushions such as unbleached felt, muslin, moleskin, foam, or Plexiglas to provide adequate weight distribution.
- Mount the object solidly to minimize the problems of balance, vibration, and support.
- Don't attach the object directly to the exhibit environment. First attach it to a mount, then to the case, etc.
- The installation must be easily dismounted, with no traces of the mount left on the object.
- Install objects from the front of the case, one at a time.
- Use isolating materials such as moleskin, archival mat board, or Plexiglas to keep the object from touching case materials.
- Use stable materials for case interiors and supports. As they age, they must not break down and release chemicals into the case atmosphere. Adhesive, paint, and other similar materials must "cure" to the point where they are odorless prior to artifact installation. If you can smell these materials used inside of a case, don't use the case yet.

■ Materials acceptable in case interiors and for case supports include: Plexiglas or sheet acrylic, sheet, rod, and film polyethylene, unbleached muslin, unbleached linen, enamel and acrylic paints, moleskin, Neoprene, glass, inert foam, wool and linen with natural dyes, and plastic laminates such as Kydex and Formica.

■ Unacceptable materials for case interiors and supports include latex paints and some dyes because of their high sulfur content, and natural rubber.

■ Beware of the static electric charge that Plexiglas attracts. This charge may cause lifting of friable pastels and charcoal drawing materials and may pose a threat to such materials as gold leaf.

■ Filter ultraviolet rays from fluorescent fixtures with UF-3 composition Plexiglas or acrylic sheet. These materials come in either sheet or tube form, and when viewed on end have a yellowish tint. Avoid "self-shielding" fluorescent tubes and applicable films or solutions as they are not as reliable or effective.

Maintenance

Provide easy access to all components of the exhibit that require periodic maintenance, replacement, or repair. For example, don't encase a fan motor in such a way that you must destroy an $800 case to replace a $3 motor. Use materials on the outside surfaces that are durable, easy to clean, and replaceable if damaged. Reinstall all lamps just prior to the exhibit opening and schedule re-lamping at a point in time equal to 75 percent of the lamp's rated life. A systematic approach to the maintenance, prescribed prior to the opening, keeps the exhibit looking like new.

Production

The production of the exhibit is the last element of the process, and, if the other steps have been followed, the easiest. Many sources deal with the actual fabrication process. Two basic texts you should have on hand are *Help for the Small Museum* and *Exhibits for the Small Museum*, both by Arminta Neal.

Available monies, time, and resources vary from institution to institution, and even from exhibit to exhibit in the same institution. For every exhibit in every institution, however, attention to detail denotes a professional exhibit. With careful planning and scheduling, you will have the time to address the details.

Execute fabrication with the highest possible attention to finish detail—no matter what the material. Finish and clean all visible surfaces. In keeping with local code requirements, conceal all power lines and other utility services. Take the extra twenty minutes necessary to wipe the dust from the gallery fixtures. Attention to cleanliness, construction, and installation can make the difference between a poorly received, expensive exhibit and a well-received, inexpensive exhibit.

Preplan, schedule, develop, design, install, and then offer your audience an informative, interpretive exhibit on time and within the budget.

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The National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210, offers these useful publications: "Protection of Museum Collections" (911), "Protection of Library Collections" (910), Fire Protection Guide on Hazardous Materials" (5M-5-72-FP-CP 5M), "Fire Protection Handbook" (FPH1369), "Installation of Portable Fire Extinguishers" (10), "Maintenance and Use of Portable Fire Extinguishers" (10A), "Life Safety Code" (101), "Protection of Records" (232), "Archives and Record Centers" (232AM), "Tentative Recommendations for Evaluating Fire Protection at a New Facility" (5A-T), and, in ten volumns, *National Fire Codes* (NFC-1-X).

Charles L. Baker, chief of exhibits at the Tennessee State Museum in Nashville, has organized, designed, and fabricated or supervised the installation and fabrication of over one-hundred exhibits. Budgets for these exhibits ranged from a few hundred dollars to over $5 million; staff numbered from one to thirty. Baker holds a master's degree from the University of Southern Florida and a bachelor of arts degree from California State University. He formerly directed the Art Center at Maitland, Florida, administered programs for the Hillsborough County Museum of Science and Natural History in Tampa, and directed the Tampa Junior Museum.

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TECHNICAL LEAFLET 137

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HISTORY NEWS TECHNICAL LEAFLET

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Charting the Impact of Museum Exhibitions: Understanding the Public's Perspective

BY GAIL ANDERSON AND ADRIENNE HORN

Today, museums operate in an increasingly more complex and changing marketplace. Survival means understanding the needs and perspectives of different museum audiences, both actual and potential, and finding the specific niche that is relevant and appropriate to the communities that each museum serves. Many management tools have helped museums navigate through these challenging times. Evaluation, the study of customer perspectives about specific programs or ideas, remains one of the most effective tools that museums have used.

The goal of this technical leaflet is to explain evaluation as a tool for strengthening museum exhibitions in order to help museum leaders determine what approach is best suited for the particular exhibition needs in their organizations. It should be noted that the evaluation methods discussed can be used to assess the broad range of public programs that museums and historic sites offer.

This technical leaflet reviews:

- What is evaluation?
- What questions should you ask before conducting an evaluation study?
- What are three common types of evaluation?
- What evaluation methods exist?
- Who should conduct evaluation?
- What is the role of evaluation in museum decision making?
- What are some good resources on evaluation?

WHAT IS EVALUATION?

For the purposes of this technical leaflet, evaluation is defined as the activity which gathers and analyzes museum visitor responses and perceptions of a particular museum exhibition. Museums conduct evaluation because they want to improve what they do and they want to know what their customer, the visitor, thinks about their exhibitions. The ultimate value of evaluation studies is how the gathered data informs museum leaders and impacts future decisions for enhancing the public's enjoyment of museum exhibitions.

WHAT QUESTIONS SHOULD YOU ASK BEFORE CONDUCTING AN EVALUATION STUDY?

Before addressing the list of questions below, consider: is your institution ready to conduct an evaluation study, and is an evaluation study appropriate given the resources and museum leadership in place? If the answer is yes, answer these questions.

1. What exhibit or program do you want to evaluate? What are your reasons for conducting an evaluation study?
2. What are the goals and objectives for your evaluation study?
3. At what point are you in the development process in the exhibition?
4. If you conduct an evaluation study, who within the museum would be responsible for overseeing the study? Professional staff? Volunteers? Board members?
5. What resources will your museum commit to the evaluation? Financial? Time? Staff or volunteer time? Space? Leadership?
6. Who will conduct the study? Staff or volunteers? Consultant? University students?
7. What level of training for staff and volunteers, if any, will be needed to conduct the evaluation?

Front-end evaluation helps museums better align the focus and content of its exhibitions with its intended audiences.

WHAT ARE THREE COMMON TYPES OF EVALUATION?

1. FRONT-END EVALUATION

Front-end evaluation gathers information about an audience's knowledge, perceptions, or attitudes about a topic, theme, or concept for an exhibition in the early stages of development. A museum planning team may wish to test an idea for an exhibition with members of the public BEFORE investing substantial time and funds to develop the exhibition.

The goal for conducting front-end evaluation is to determine the public's receptivity and understanding of an idea proposed for an exhibition. The information gathered provides insight into the potential success of an exhibit. Sometimes, feedback may instigate a change in the name of the exhibit, the focus of the exhibit, the contents or objects featured in the exhibit, etc. It can fundamentally change an exhibit before resources have been allocated for development, installation, promotional activities, etc. Front-end evaluation helps museums better align the focus and content of its exhibitions with its intended audiences.

The public that is chosen for the front-end evaluation

will depend on the emphasis of the exhibition and its goals. For example, the public may include current visitors, visitors of a certain age bracket, or weekend visitors. Or the evaluation could examine several different subsets of audiences including current visitors, people who live in a certain neighborhood or have a certain zip code, or people who frequent a certain section of your city. It all depends on the goals of the exhibition, funding, time, and available expertise.

One example of front-end evaluation took place at The Oakland Museum of California. The members of the Natural Sciences and Education Departments wanted to develop an exhibition about the most pressing urban environmental issues facing the San Francisco Bay Area. The staff knew that input from the Oakland community was necessary to assure a broad perspective on the topic. Over 200 community members representing a broad and diverse spectrum of individuals from businesses, the public school system, environmental agencies, churches, neighborhood associations, etc. were invited to a community meeting held at the museum. After two community meetings and the work of a community organizer, who interviewed leaders in the community, the museum felt that it had a broad representative sample of viewpoints.

The top urban environmental issues identified by community members were violence and opportunities for youth to engage in productive activities, including job training. The museum worked collaboratively with the Oakland Men's Project, an organization devoted to the prevention of violence, to help shape a conceptual plan that addressed both of these issues. Following this work, the museum hired three teen interns to organize and lead after school activities, in a local vacant lot, that focused on environmental issues impacting the children's local community. Part of the project involved creating a mural on a vacant wall, formerly a target for graffiti. All of this work eventually evolved into an exhibit that featured the urban environmental issues central to these inner city teens.

Had The Oakland Museum of California mounted an exhibit without community input, there would have been little connection to the very audience they wanted to reach, Oakland citizens–specifically teenagers. The museum altered their approach, involved local teens in an innovative educational program and exhibition development process, and created a much more relevant exhibition as a result of this front-end evaluation.

2. FORMATIVE EVALUATION

Formative evaluation collects critical visitor feedback about aspects of an exhibition DURING the development or design phase. The reason for conducting formative evaluation during the developmental stages is to provide feedback that may cause alterations or modifications to the exhibit before the exhibit components are finalized. This can save time and money in the long run.

The point at which formative evaluation occurs may depend on staff availability and funds as much as it may depend on identifying the best time(s) to conduct the evaluation. If the exhibition is substantial in size and scope, staff may wish to conduct formative evaluation at several points during the development of the exhibit.

Like front-end evaluation, the public that is selected to participate in the evaluation is dictated by the goals and objectives of the exhibition, the time and funds devoted to evaluation, and the level of expertise of those individuals conducting the study.

For example, at the California Academy of Sciences in San Francisco, an in-house evaluator conducted a formative evaluation using a prototype of a three-dimensional model about earthquake fault lines. The goal of this exhibit component was to help the visitor better understand the impact of fault movement. The result of the formative evaluation revealed that visitors had some confusion with terms used in the labels, and a strong desire to manipulate the components in the model. Since the model prototype had no moving parts, the visitors' responses pointed to the need to modify the model itself and to clarify terms in the labels. Since time did not allow for making a new model, the project team painted a road on the surface of the model showing the effects of the shifting earth. Because roads are familiar to the visitor, the staff felt that showing a dramatic break in a road would show the impact of fault movement and would help demonstrate the main message of the exhibit. The addition of the painted road also strengthened the connection to the label illustrations.

3. SUMMATIVE EVALUATION

Summative evaluation gathers visitor feedback and response to an exhibition AFTER it has been installed. The reason for conducting summative evaluation is to assess the response of visitors who viewed the exhibition. In this sense, summative evaluation focuses on how well an exhibit met its goals. The target audience for summative evaluation is already defined: it must be

someone who saw the exhibition or used the exhibition. In addition to informing staff of areas that might require modification while the exhibit is still up, the results of summative evaluation can also inform the development and design of future exhibitions.

An example of summative evaluation occurred at the Monterey Bay Aquarium, where a trained evaluator studied visitor behavior in an exhibit called, Kelp Lab. The goal of the evaluation was to note how visitors used the exhibit and to determine how well the exhibits held the attention of aquarium visitors. Using the evaluation method of timing and tracking, the evaluator documented visitor behavior and movement in the exhibit.

This summative evaluation study revealed: the majority of visitors stopped at more than 51% of the exhibit areas in the Kelp Lab; some areas of the exhibit space were not as heavily used as others; and the use of the microscope stations pointed to the fact that the microscopes were installed at the wrong height for easy use. Further observations revealed that: visitors tended to move around Kelp Lab, often backtracking in order to spend more time at a particular exhibit; when visitors could face each other at an exhibit area they tended to stay longer than if they stood next to one another looking straight ahead; and last, during busy hours, visitors would only wait five to ten seconds to gain access to an exhibit area before moving on.

The feedback from this summative evaluation study shed new light on some of the assumptions that the staff had about their visitors. The staff learned that visitor behavior in Kelp Lab countered some of the main assumptions made about aquarium visitors in general, such as: visitors do not backtrack in long, low lit halls with exhibits; and visitors will wait to view an exhibit if they are interested. The staff recognized that while this summative evaluation revealed visitor movement and behavior in Kelp Lab, it did not reveal what the visitors learned since interviews or questionnaires were not part of this study. Last, the results of the evaluation helped inform the design of a new interactive lab area at the aquarium.

WHAT EVALUATION METHODS EXIST?

Each type of evaluation requires the selection, design, and use of the appropriate method(s) to achieve the goals and objectives of the study. There are several key elements that impact the effectiveness of evaluation: (A) the size of the sample; (B) the method(s) used; and (C) pre-testing.

(A) Each evaluation identifies who will be studied and how many people will be included in the study. This is very important because a study may not be valid if an inadequate number of people are included. Mathematicians and scientists have developed statistical formulas to guide decisions about sample size.

(B) Evaluation methods collect either qualitative or quantitative information. Depending on the scope of the study, using both methods can provide more balanced feedback. Qualitative evaluation yields information about public perceptions and attitudes. A focus group is a good example of qualitative information, however, because the sample size is small (8 to 10 people), the results are of an anecdotal nature. A telephone survey is a good example of a quantitative study. Telephone survey responses are numerically analyzed and are statistically reliable.

(C) Pre-testing is an essential step for finalizing the evaluation instruments that are used. Pre-testing refers to a trial run of the instrument on a small sample size. The value of pre-testing is finding the flaws in the study before extensive amounts of data have been collected. It provides information so that the evaluator can modify the instrument to be more effective in meeting the goals of the evaluation.

BELOW ARE BRIEF DESCRIPTIONS OF THE MOST COMMON EVALUATION METHODS USED.

Observations

Observation techniques refer to observing visitors in an exhibition. There is no discourse between the trained observers and the visitor. Rather the observer predetermines what will be observed and how it will be noted. Then the observer collects the information.

There are several types of observation methods:

- *unobtrusive observation* refers to an evaluator who observes visitors in a non-intrusive manner while making notes of their movement and behavior through the exhibit.
- *timing and tracking* refers to the process of recording the amount of time a visitor spends in front of individual display cases and/or engaged in interactive components during their pathway through an exhibit.

• *media-collected information* may include a video tape or other means that captures visitors in the exhibition usually at a particular place where the camera has been stationed.

Interviews

Interviews require an individual or several individuals to interact with a visitor or prospective visitor by asking a predetermined set of questions. There are several types of interviews used for evaluation studies.

• *Telephone surveys* are interviews conducted via the telephone by trained individuals. The interviewer uses a script that outlines a list of questions, exactly what information is desired, and how the information is to be collected. The size of the sample is important to determine whether or not the sample size is valid.

• *Visitor intercept interviews* are conducted with visitors in the museum. Guidelines about the selection of interviewees is essential for validating the information. Random selection is a common method and avoids the trap of the interviewer selecting "people who look nice".

• *Focus groups* are groups of selected individuals who participate in a discussion. Focus groups are usually facilitated by trained experts who ask a series of questions about a specific topic. Unlike individual interviews, a focus group provides a forum for interaction among the focus group participants. Frequently, lively discussion takes place as the participants respond and react to the questions and each other.

Many museums choose to conduct focus groups in a focus group facility. Behind a one-way mirror, observers, such as staff or board members, may watch the focus group session. Still others use video to document the session in order to share the proceedings with museum staff or board members. However, a focus group can also take place in a meeting space within the museum.

Questionnaires

Questionnaires are used to conduct surveys about the public's response to a particular exhibition. Questionnaires may use multiple choice questions, open-ended questions, or a mixture of both. If the sample size is substantial, the questionnaire should be developed and analyzed by individuals who specialize in collecting this type of information.

Mock-ups/Prototypes

Mock-ups refer to models of an exhibit component or rough version of a proposed element of an exhibit. Frequently, a mock-up is created out of butcher paper, foam core and magic markers to mimic the intended exhibit component. If a museum has ample resources, a close replica, a prototype, may be created to test visitor response.

Evaluation can be one of the best tools for assisting a museum in strengthening the impact of its exhibitions and increasing visitor satisfaction.

Mock-ups/prototypes are usually made for:

• *exhibit components,* like an interactive device or an interpretive panel, etc.

• *labels* that replicate various versions of text in support of an exhibit component. This may be provided in addition to the exhibit component mock-up.

• *pamphlets or printed materials, that accompany the exhibition,* may be developed to test visitor response. These may be developed in a format close to the final intended version, a prototype, or created in simple formats to indicate design and layout.

WHO SHOULD CONDUCT EVALUATION?

Who conducts evaluation studies is a critical question. Every museum has several options.

1. Conduct the evaluation in-house.

Many museums use volunteers and appointed staff members to carry out their evaluation studies. A few, large museums have an evaluator on staff or a staff member with training in evaluation to oversee and conduct evaluation projects.

2. Hire a trained evaluator or research firm.

The reason many museums use an outside consultant is to gain objectivity about the museum and to benefit from their expertise and experience. If a museum wishes to engage in extensive evaluation, it is recommended that the museum speak to several people who are

trained in evaluation to learn of their approach, experience, and fees for conducting the type of study desired. Consultants frequently prepare an estimated budget for a conducting an evaluation. Clearly, some forms of evaluation, such as telephone surveys and similar types of quantitative research, require trained experts.

3. Engage the services of the local university.

Many museums reside in communities that have universities with graduate students eager to gain experience in evaluation. Consider contacting your local university to see if your museum might be a site for a class project or research project for a particular student.

WHAT IS THE ROLE OF EVALUATION IN MUSEUM DECISION-MAKING?

Often, evaluation occurs because it is required by funders or is prompted by external pressures. It is best to conduct evaluation when it is genuinely valued by the museum leadership as a useful tool for understanding the public's viewpoint and when management is prepared to make decisions based on the feedback resulting from evaluation. Much wasted time and financial resources have been lost on ill-directed evaluation studies; however, even more time and financial resources have been lost when evaluation has not occurred. Evaluation can be one of the best tools for assisting a museum in strengthening the impact of its exhibitions and increasing visitor satisfaction.

In the end, each museum must decide what is best and most appropriate for their institution given their resources, time, and long term goals. Ideally, each museum should incorporate evaluation in some form into their exhibition development process. Once evaluation is incorporated into a museum's long term exhibition schedule, it is wise to budget at least 10% of the total cost of the exhibition for post-installation evaluations and modifications.

WHAT ARE SOME GOOD RESOURCES ON EVALUATION?

This technical leaflet is an introduction to evaluation for museum exhibitions. For those interested in learning more about evaluation, there are many reference books and articles that provide in-depth information on evaluation. Further, many evaluation and visitor studies experts and professional organizations can provide guidance, information, and training on evaluation. Below are listed some selected references and resources on evaluation in the museum field.

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INTERNET

A bibliography on visitor studies, evaluation, market research, and performance measurement compiled by three museum professionals is available at http://www.civilization.ca/cwm/biblio/bievaeng.html.

MUSEUM-L—Museum Discussion List
To subscribe, send e-mail to
LISTSERV@LSOFT.EASE.COM

SIRIS-Smithsonian Institution Research Information System
http://www.siris.si.edu/

This site allows you to search the Smithsonian Library catalog, the Art Inventories catalog, Smithsonian chronology, and the Smithsonian Research and Bibliographies catalog. The last catalog includes the museum studies database which includes citations of museum studies theses and dissertation and indexes ALI-ABA proceedings, the *Journal of Museum Education* and AAM conference proceeding audio tapes.

EVALTALK—Evaluation Discussion List
To subscribe, send e-mail to
LISTSERV@UA1VM.UA.EDU

ORGANIZATIONS

The museum and history field is supported by a number of professional associations and organizations. Many of these may be useful resources for information about evaluation. Check AASLH's home page at http://www.aaslh.org, the *Directory of Historical Organizations in the United States and Canada, the Official Museum Directory* for additional organizations.

American Association for State and Local History (AASLH)
1717 Church Street
Nashville, TN 37203
615-320-3203
http://www.aaslh.org/

American Association of Museums (AAM)
1575 Eye Street, NW, Suite 400
Washington, D.C. 20005
(202) 289-1818
http://www.aam-us.org/

Committee on Audience Research and Evaluation (CARE)
Ellen Giusti
American Museum of Natural History
Central Park West at 79th Street
New York, NY 10024
(212) 769-5646
http://members.aol.com/intlabel/care

American Evaluation Association
PO Box 704
Point Reyes, CA 94956
888-311-6321
http://www.eval.org

Association of Science and Technology Centers (ASTC)
1025 Vermont Avenue, Suite 500
Washington, DC 20005
(202) 783-7200
http://www.astc.org/

Educational Research Association
Informal Learning Environments Research Group (ILER)
Ohio State University
947 East Johnstown Road
Columbus, OH 43230
http://darwin.sesp.nwu.edu/informal

Museum Education Roundtable (MER)
621 Pennsylvania Avenue, SE
Washington, DC 20003
202-547-8378
http://www.erols.com/merorg/

Museum Reference Center
Smithsonian Institution
A&I Building, Room 2235
900 Jefferson Drive SW
Washington, DC 20560-0427
202-786-2271
http://www.sil.si.edu/Branches/mrc-hp.htm

National Association for Museum Exhibition (NAME)
1220 L Street NW
Suite 100-270
Washington, D.C. 20005
800-450-6602
http://130.160.178.161/NAMEindex.html

Qualitative Research Consultants Association (QRCA)
PO Box 2396
Gaithersburg, MD 20886-2396
888-674-7722
http://www.qrca.org

Visitor Studies Association (VSA)
Department of Psychology
Colorado State University
Fort Collins, CO 80523
(970) 491-4352
http://museum.cl.msu.edu/vsa

CREDITS

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Examples of evaluation studies featured in this article were provided courtesy of the following museums and staff members:

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HISTORY NEWS TECHNICAL LEAFLET

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Exhibit Conservation: Strategies for Producing A Preservation-Responsible Exhibition

BY NANCY JEAN DAVIS

The dual responsibilities of preservation and exhibition, so central to collecting institutions, have often been viewed as contradictory. This Technical Leaflet reviews preservation-responsible strategies that have been used to create an aesthetically pleasing, informative display that also provides a protective environment for the objects.

More detailed information can be found in the National Park Service's 1999 publication *Exhibit Conservation Guidelines: Incorporating Conservation into Exhibit Planning, Design and Fabrication*.[1] This CD-ROM resource includes charts, tables, diagrams and technical information to help implement the general guidelines offered here.

Adopt a Preservation-Responsible Exhibit Process

A preservation-responsible process can be used for an exhibit of any size, whether an historic room setting or a gallery show, and whether the exhibit is handled in-house by a small staff or is designed by a large firm. Integration of conservation concerns into the project is facilitated through a structured process. Involve an exhibit conservator or other knowledgeable collections care professional early in the process. It is usually difficult and costly to correct a problem later in the process. Begin with careful selection of objects that are appropriate for the proposed length and type of exhibit.

Next, establish the specific conditions needed to protect objects selected for display. Collectively called the conservation criteria, these requirements are determined early in the process and then addressed throughout the planning, design, production, and installation of the exhibit. Some of the conservation requirements will be interdependent, and there can be multiple methods of providing any one criterion. Include a series of meetings to discuss progress, consider alternative solutions, and allow time for successful strategies to be developed. Both the schedule and the budget for the exhibit must support a preservation-responsible design.

As opposed to storage, exhibition usually exposes the objects to higher amounts of light and pollutants, more extreme ranges and greater fluctuations in temperature and humidity, and an increased risk of physical damage. It is important to protect the objects during this inherently stressful period by maintaining high standards of collection management. Establish a clean, secure, and environmentally moderate holding area to gather objects and stage their installation. Document the objects completely, including a written condition assessment for every object. Review handling guidelines with each team member, stressing special precautions for handling potential human health hazards such as natural history specimens and radioactive materials. Establish an orderly process for installation and assign one person to have oversight of object handling and movement.

Select an Appropriate Exhibit Team

Many institutions design and produce exhibits using in-house staff, allowing a cooperative working relationship to be built through a succession of projects. Ideally every exhibition team will include a project manager, a designer, a curator, an educator, a registrar, a preparator or installer, and an exhibits conservator. Some may require a security consultant or other specialized member. In small-staffed institutions or for small-scale projects, fewer individuals may comprise the team.

No matter what the size, however, the entire team shares accountability for professional care of museum objects throughout the process. The exhibit conservator establishes the conservation criteria and then works with the designer, curator, and other team members to find practical ways of achieving the recommendations. Whenever a consultant is used for a project, including a conservator or design firm, the contract(s) should clearly state a responsibility to work with the institution to assure long-term object preservation. Include one or more formal reviews by the entire exhibit team at certain points in the process.

An exhibit conservator combines a broad knowledge of preventive conservation with first-hand exhibit experience. Locate an exhibit conservator through the American Institute for Conservation's *Guide to Conservation Services*[2], by talking with other institutions and design firms, or by reviewing publications and lists of conference presenters. Follow up with an interview to establish the conservator's breadth of knowledge and to help anticipate the tone of a working relationship. Finally, check references.

If hiring an exhibit conservator for the project is not possible, assign the role of overseeing conservation concerns to a curator, registrar, or collections manager. Consulting with an exhibit conservator on an as need basis is a practical way for even small institutions on very limited budgets to ensure the most preservation-friendly exhibits possible.

Exhibitions may be designed by institutional staff or a design firm. When an outside design firm is required, select one committed to collection preservation. A firm that believes design elements are more important than the collection is unlikely to achieve a preservation-responsible exhibit. Seek out designers who have a basic knowledge of conservation, have worked with exhibit conservators in the past, and are willing to incorporate conservation concerns into key issues such as case design, construction materials, and lighting restrictions. Interview the curators, conservators, and registrars at institutions that have previous experience with the design firm(s).

Exhibit fabricators and installers must have the experience to build exhibit components, especially cases, according to conservation specifications. Mount-makers and installers not only handle collection objects but construct the mounts which have a direct impact on object preservation. Choose mount-makers with caution; look for those with museum experience and check their references. Insist that the designer and mount-maker confer with the conservator and curator.

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[1] Raphael, Toby with contributions from Nancy Davis. Exhibit Conservation Guidelines: Incorporating Conservation into Exhibit Planning, Design and Fabrication. Washington, DC: National Park Service, Division of Conservation. 1999. (Available for $49.95 from Harpers Ferry Historical Association. (800) 821-5206.

[2] Guide to Conservation Services. American Institute for Conservation, 1717 K Street N.W., Suite 301, Washington, DC 20006 (202) 542-9545.

Define Conservation Criteria

While the curator, registrar, collections manager, and other staff have input, the conservator typically establishes the conservation criteria[3], which set necessary but practical limits on temperature and humidity, light, pollutants, handling, and security. In addition, the conservation criteria alert the designer and preparator to any unique conditions that may affect the handling or mounting of the objects, or that may restrict the length of display.

The conservation criteria must be clear, written, and specific to the objects chosen for display. Generalities can inflict unnecessarily stringent conservation standards, or can miss particularly vulnerable or significant objects requiring unique safeguards. In addition to conducting a condition assessment of each object, the exhibit conservator considers the ambient conditions in the exhibit space and the duration of the exhibit. Although it should be assumed that all team members will work cooperatively to meet the goals, the realistic limits of time and resources available to plan, produce, and maintain the exhibit must be factored into establishing the criteria. For this reason, it is often more useful to establish the degree of sensitivity for each object then identify a range of acceptable conditions rather than an exact goal.

Some objects may be too sensitive or irreplaceable to be displayed, and certain exhibit spaces may be inappropriate for some collections. When the conservation review identifies one object as too fragile or susceptible for even a short period of display, consider using another object or substituting a reproduction or facsimile of the original, such as a color photocopy, a photograph, or a scanned printed image.

Usually, however, thoughtful compromise will arrive at a preservation-responsible way to display even a vulnerable object. For example, rotating objects on display will minimize the light damage and physical distortion suffered during a long-term exhibit. Conservation treatment may be required to stabilize some objects; have a conservator(s) advise on treatment needs early so necessary funds and time for treatments can be secured.

Establish Multi-Level Design Strategies

A preservation-responsible design process relies on the designer, curator, and conservator working together to make conscientious choices and trade-offs. Conservation criteria for controlling climate, pollution, lighting, and security can be addressed both within the overall exhibit space (the macro-environment) and within the more immediate environment around an object, including the exhibit case (the micro-environment). Controlling the exhibit at different levels to fulfill conservation criteria is a cost-effective strategy. The following example illustrates a multi-level approach for addressing temperature and relative humidity recommendations.

Macro-solutions. Use the building's mechanical system to control temperature and humidity in the overall exhibit space by either adjusting the existing system or by installing additional equipment. This solution provides optimum protection for all objects, but may not be financially feasible. Installation of new ductwork and piping is often problematic in older structures, and maintaining an elevated wintertime humidity can damage building structure.

Micro-solutions. An object's immediate environment can be moderated by locating it away from heating and air-conditioning vents, windows, room entrances, and other areas of rapid air-movement. Avoid over-heating an object by keeping lights at least 24 inches away. Use a well-sealed case(s) to provide a micro-climate for sensitive objects as a low-cost alternative to controlling the entire exhibition space. An exhibit case can also be used when a more stringent environment is required by a few objects, or when different objects need different environments. A case intended to support a micro-climate must be well-sealed, which will add some expense, and require longer design and construction time.

Determine Display Format

In terms of preservation, there is a significant difference between displaying objects in an open exhibit format without protective enclosures, and inside display cases. Open display is inherently stressful for collections and requires special security and increased cleaning and maintenance procedures. Limiting dust infiltration into and moderating the exhibit's macro-environment becomes particularly important.[4]

A conservation-grade case provides physical security and, in addition, can be built to maintain a micro-climate that satisfies stringent conservation criteria[5]. A conservation case, built according to specifications, can buffer collections from rapid changes in the ambient temperature and relative humidity or can provide a specific relative humidity and/or temperature. Dust, chemical pollutants, and insects can be excluded from the conservation case environment and ultraviolet and infrared radiation can be reduced dramatically. Objects of great significance or value can be preserved in an atmosphere of inert gas that essentially stops chemical deterioration processes.

Historic house displays are by nature open formats. Rotating objects on open display and limiting the total length of exposure can limit accumulative damage. As a low cost and effective alternative, consider displaying valuable or sensitive objects in an exhibit case located within the historic room setting.

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[3] Even when a collections staff member sets the criteria, they turn to the conservation literature for guidance. A conservator should review the criteria, especially for objects of unknown or high sensitivity to deterioration.

[4] Although the information outlined in this Technical Leaflet can be used to mitigate problematic conditions in an open format, much of the discussion is geared towards exhibit case display.

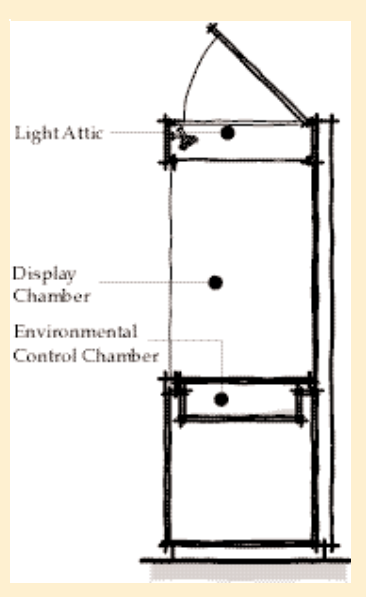
[5] Enclosing papers, photographs, and textiles within air-tight frames provides benefits similar to those of a conservation-grade case.

Design Conservation-Grade Exhibit Cases

This leaflet can only summarize the technical aspects of designing a conservation case[6]. For any particular project, the exhibit conservator and designer collaborate to produce a case that meets specific conservation criteria. Fabricators must be provided detailed drawings and specifications to produce a successful conservation case. Building a prototype allows testing and modification to correct design or fabrication deficiencies. One or more mid-production inspections guarantee that conservation features are constructed as specified. Performance testing is recommended on each case before objects are installed. The schedule must allow enough time to evaluate and test the assembled case within the exhibit space.

Conservation-grade cases are either sealed or ventilated. A sealed exhibit case limits the air exchange rate between the display chamber and the ambient environment and thus can be used to create and sustain a micro-climate. On the other hand, objects in a ventilated case are exposed to the ambient temperature and relative humidity of the room, but air entering the case is filtered to exclude dust, insects, and chemical pollutants.

Often the majority of display cases in an exhibit are ventilated, while a few well-sealed cases display objects requiring more stringent environmental conditions. Compared to a more conventional, unsealed exhibit case that undergoes several air exchanges per hour, a well-sealed case can limit air exchange to one in 72 hours.



Three chambers of a case: display, lighting, and maintenance or control. Isolate lighting fixtures from the display chamber with a transparent glass or acrylic panel sealed with a gasket or caulk. If a micro-climate will be maintained, locate silica gel or equipment in the maintenance chamber. Provide access panels or doors for staff to service the lighting and maintenance chambers.

Precise design specifications and production techniques are required to achieve this decreased air-exchange rate. Construction joints must be tightly built and sealed with a conservation-approved gasket or caulk. Sheets of acrylic and glass have low rates of moisture diffusion and are therefore suitable for constructing well-sealed cases. Plywood, particle-board, and dry-wall, however, have higher rates of moisture diffusion making it necessary to: 1) cover the material with a vapor barrier such as a laminate of melamine and resin-based sheet materials, metal foil, or polyethylene or; 2) seal the material with a moisture-barrier paint. Commercial pre-fabricated, air-tight hatches such as acrylic maritime yacht portals provide convenient access to a maintenance chamber. Crank-down cam fasteners form a tight seal for larger access panels or doors.

Although easy to construct, the conventional case with uncontrolled ventilation provides limited conservation benefits. Therefore, even when a micro-climate is not required, it is advisable to construct a moderately-sealed case with controlled ventilation through vents or portholes that are filtered to exclude dust, gaseous pollutants, and insects.

While mechanical fans are sometimes needed in very large cases or to maintain positive pressure, a passive system is sufficient for most applications. Two or more well-positioned portholes in the case panels will promote good air mixing throughout the case interior. Ambient air is filtered as it passes through the portholes into the exhibit case by either: 1) covering the vent with a tightly woven, yet breathable fabric; 2) fastening a pre-fabricated air duct filter to the vent or; 3) fitting a porthole with a commercial respirator filter.

Maintaining a positive pressure within an unsealed exhibit case is another way to exclude dust and insects. When constructing a positive pressure case, no attempt is made to tightly seal joints. One or more muffin fans fitted into a case panel blows filtered air into the case, thus preventing any unfiltered air from infiltrating through seams. As with any ventilated case, the temperature and humidity inside the case will be the same as that in the ambient space.

Create a Micro-Climate Inside a Case

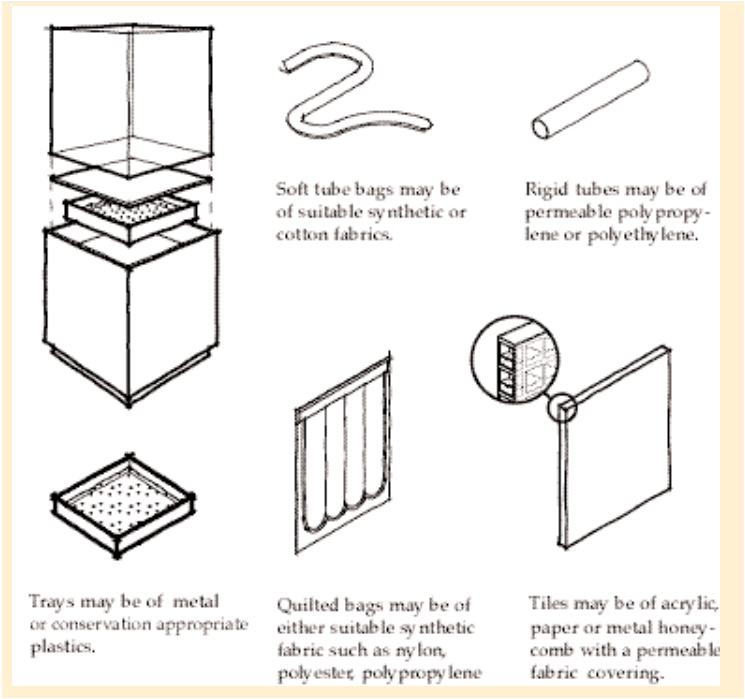
Conservators and designers have developed simple, reliable, and cost-effective methods to protect humidity-sensitive collections in a well-sealed display case. Depending on the conservation criteria, a well-sealed case can be made to either stabilize or control its relative humidity. *Stabilization* evens out or "buffers" fluctuations in the relative humidity, reducing the rate and degree of change that may occur in an uncontrolled exhibition space. The alternative approach of *control* maintains a specific, constant level of humidity.

A case designed to stabilize or control relative humidity must have a well-sealed display chamber and a maintenance chamber to hold the humidity response substance. Air flow between the display and maintenance chambers is created by either: 1) covering a perforated case deck with fabric or another decorative material or 2) using a floating deck panel with a perimeter gap along all four sides. Organic objects, wooden

[6] Look for similar features when choosing commercially available exhibit cases.

case elements, and paper or fabric liners, release or absorb moisture in response to changes in the relative humidity or temperature. In certain situations, loading the maintenance chamber with cellulose materials, such as cotton, paper, or mat-board can stabilize the display chamber.

More typically, either a mechanical system using humidification units, or a passive system using silica gel is required. A mechanical system uses a small self-contained climate control system to feed conditioned air into the exhibit case, and then either force air out into the room or re-circulate it through the system. For most applications, a passive design for humidity control is effective. Simple passive systems can be built without major expense and need only limited maintenance. The case environment has to be monitored to determine the effectiveness of the control system and to alert staff that a problem exists or that it is time to replenish or recondition the silica gel. Equipment to monitor internal relative humidity includes thermo-hygrometers and data loggers.



Passive humidity control. The maintenance chamber holds either loose silica gel contained in a tray or in mesh bags, silica-impregnated cassettes, tiles, paper, or foams. Generic silica gel desiccant is useful for maintaining relative humidity between 30 and 40%. Newer, hybrid silica gels are better for a middle range of 50 to 60% relative humidity.

Choose Stable Construction and Finish Materials

Exhibition designers can choose from a wide range of non-hazardous materials for constructing exhibit cabinetry and finishing case interiors. The following is a brief overview of current recommendations. Talk with an exhibit conservator regarding specific selection. Unknown or questionable materials require research and/or testing.

- **Adhesives.** Avoid "contact" and "pressure sensitive" adhesives, vulcanized or synthetic rubber-based adhesives, hide glue, and most two-part epoxy and polyester adhesive systems. Less harmful adhesives include acrylic resins and high-temperature hot melt glues. Limit use of adhesives inside the display chamber by wrapping fabrics around solid shapes such as case decks and securing with staples, hand-stitching, and archival-grade double-sided tape
- **Paint systems and varnishes.** Alkyd or oil-based products out-gas for long periods of time. One-hundred percent acrylic latex paints are better choices but can remain tacky in high humidity.
- **Fabrics.** Sulfur compounds in wool damage materials, including silver. Pure cotton, linen, silk, and polyester fabrics without surface finishes or dye are generally non-damaging. Dyed fabrics, which may stain an object during periods of high humidity or accidental wetting, should be washed until the water runs clear. Carpets with a cotton fiber of a short nap are best, but if unavailable, a synthetic fiber should be chosen. Rubber-based backings, often found integrated at the base of the carpet fiber, should be avoided.
- **Foams.** Polyethylene foams that are cross-linked with radiation or foamed with inert gas are the most stable.
- **Wood.** Certain woods such as oak should not be used, while some tropical hardwoods such as Honduran mahogany emit only small amounts of acetic acid. Woods that have been kiln- or oven dried, or steam- or pressure-treated, tend to be more corrosive than naturally aged wood.
- **Engineered Wood Boards.** Plywood and wood-particle boards made with phenol-formaldehyde are believed to be the most stable; specify "exterior" grade plywood with face veneers of grade "A" or "B." Alternatively, use medium density overlay board (MDO), an exterior board with grade "B" face veneers covered with a smooth resin-treated fiber surface that does not need to be sanded. If fire-grade wood is required, specify second generation, non-hygroscopic fire retardants.

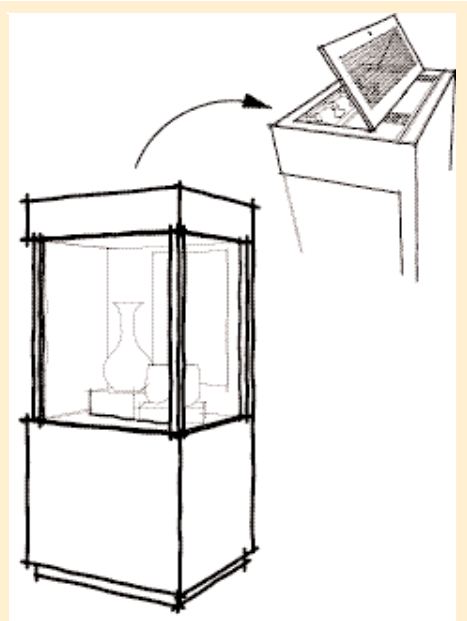
When practicality dictates that problematic materials such as wood products be used, prevent out-gassing into the display chamber by sealing exposed surfaces with a vapor-impermeable barrier such as a metal foil covered with fabric or a plastic laminate. Out-gassing from the cut edges of plywood tends to be high, so seal construction joints with a conservation-approved caulk. Avoid direct contact between an object and a painted or varnished surface by mounting the object or by isolating it with a layer of inert linen, cotton or polyester fabric, polyester or polyethylene film, acid-free paper, or paper boards. In addition, a pollution absorber can be incorporated into the maintenance chamber of the case.

Control Contaminants Inside a Sealed Case

It is important to remember that any chemicals outgassing from construction materials into a sealed display chamber will become concentrated. If conservation-appropriate materials are not used to build the exhibit, a case incorporating pollution control may be necessary to provide a safe environment for the objects. Objects that are particularly susceptible to damage by pollutants, for example silver which tarnishes in the presence of sulfur dioxide, can be protected in a chemical-free display chamber.

Activated charcoal and potassium permanganate are commonly used to control levels of chemical pollution[7]. Activated charcoal is relatively inexpensive and absorbs a wide range of pollutants including ozone, sulfur dioxide, nitrogen dioxide, hydrogen sulfide, and formaldehyde. A disadvantage is that the charcoal must be replenished before saturation. If not, it can become a secondary source of contaminants. Potassium permanganate acts as a pollutant scavenger, reacting with and not just absorbing pollutants. A color change in the product indicates when the absorbent must be replaced.

The pollutant absorber can be placed in a contaminant tray in the maintenance chamber below the display deck, hidden behind a large object, used as an impregnated fabric to cover the case floor, or enclosed in a frame package. When necessary, both pollution control and a micro-climate can be provided in the same exhibit case.



Integral case lighting. Isolate case-mounted lighting fixtures and lamps in a separate lighting chamber. Dissipate heat from the lights with vents; electric fans may be required, especially in a large case. Use a heat-reflecting glass for the transparent layer between the lights and display chamber or use double-glazed construction.

Develop a Lighting Plan

Create a lighting plan that addresses both the conservation and aesthetic requirements. Control the macro-environment of the overall room or gallery by excluding or limiting natural daylight by blocking windows or using period-appropriate window treatments, films, or woven fabric. Filter ultraviolet radiation from any sunlight or fluorescent lighting. Select low voltage bulbs to reduce light levels and use diffusers, grids, textured panels, and films to redirect some of the light. Use a rheostat to control the amount of light generated by a lamp.

Consider the lighting conservation criteria when designing the exhibit layout. Provide a gradual rather than abrupt transition between brightly lit areas and those displaying sensitive collections. Light-sensitive objects should be grouped away from exhibit entrances and points of bright light such as windows. Reduce needless exposure to light when the space is unoccupied by using motion sensors to activate some or all of the exhibit lights. Unnecessary damage from case lights during non-public hours can be eliminated by providing a separate set of lights for cleaning and maintaining the gallery. In general, maintain at least 24 inches between the lamps and the objects.

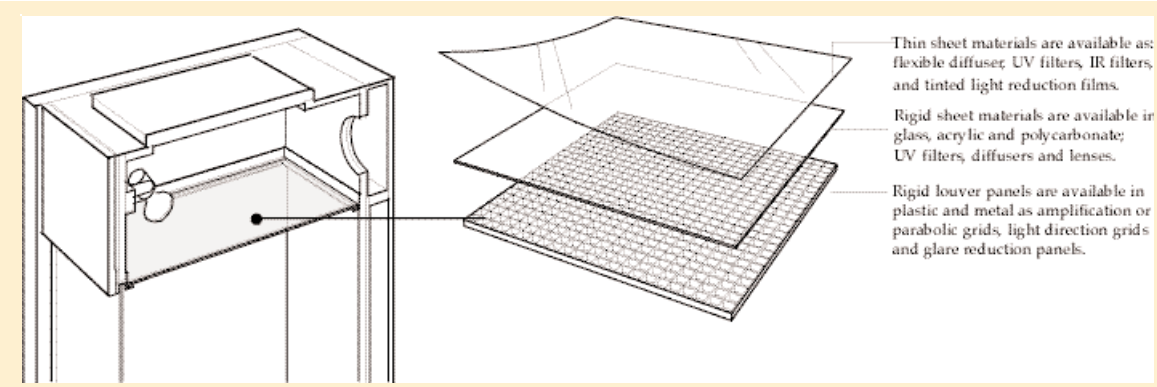
Design and Fabricate Protective Exhibit Mounts

Improperly designed or constructed mounts can scratch, bend, discolor, corrode, or otherwise damage an object. Allow for the time-consuming process of careful mount-making in the installation schedule, as well as in the exhibition budget. While the exhibit preparator usually makes the majority of mounts, there are many types of preservation-responsible mounting techniques. Discussing options with a conservator may lead to a new approach. It is particularly important to consult the conservator regarding vulnerable and problematic objects.

If there is not enough time to safely mount all objects, select different objects or use generic mounts. Even when generic mounts such as commercially available book cradles, boxes, pedestals, and ring stands are purchased, some time and skill will be required for fine adjustment. For example, additional cushioning material may be needed to evenly support a particular object. Original clamps, hooks, strings, or straps attached to objects should not carry any weight but, instead, need a support of their own. Objects should not be suspended by wires or monofilment unless the point of contact is padded.

Custom mounts designed for specific objects are made from a rigid acrylic sheet, e.g., Plexiglas, brass rod and strap, and blocks of high-density foam. Examples of custom mount types include metal rod "T" mounts, metal rod "spider" mounts, drop mounts or rod and sleeve mounts, pin mounts, straps and clips, and mannequins or partial three-dimensional

[7] Acid-free, alkaline reserve papers or boards in a frame can provide similar filtering benefits because the paper will absorb pollutants as the air passes through the paper fibers. The effectiveness and longevity of this technique is, however, difficult to quantify.



Reduce the amount of light and heat passing through the glazing panel with filters and light-directing and -controlling devices. Using metal rather than wood to construct the lighting chamber will help dissipate heat.

forms. Edges of plastic and metal mounts are always filed and polished, and may be cushioned or coated with a barrier such as an acrylic resin or paint, or with a silicon rubber.

Pad out textiles, leathers, and other fiber-based materials to prevent creasing, tearing, and deformation, and avoid layering objects on top of one another. Polyester batting or polyethylene foam, covered with muslin fabric, can be contoured over a wooden or metal support to make appropriately-sized mannequins and similar forms. Muslin linings and backings can reinforce and protect garments and hanging textiles but usually need to be applied by a qualified conservator. Quilts and similar flat textiles can be hung by inserting a metal or wooden rod, sealed to prevent direct contact with the textile, through a muslin tube that is pre-sown along one edge of the textile. Alternatively, Velcro can be used to mount a flat textile; one side of the Velcro is sown to a backing material which is hand-stitched to the textile.

Reproduce original photographs for display, then store the originals and copy negatives. Displaying photocopies of original paper documents is an excellent preservation technique. When an original paper item must be displayed, it can be archivally framed or encapsulated using a backing board of acid-free mat board and a polyester cover sheet.

Prior to display, any original image framed in acidic mats or with wooden backing boards must be reframed using archival products that are acid-free, sulfur-free, and water-fast. Sealing a frame package acts to stabilize the relative humidity inside the package, and the seal will discourage water from entering the frame during a disaster. Use bumpers on the back corners to create an air-space between frame and wall.

Inspect the physical security of all frames and replace screw eyes with metal strap “D” hooks. Use braided steel wire and picture hangers with tempered steel nails to suspend frames, preferably from individual points on both side members. Make sure that the wall fastener is securely anchored to the wall and can support the weight of the framed object.

Protect Objects During Production and Installation

Exhibit construction generates dust and chemical pollutants that must be minimized and contained. When feasible, limit dust by altering construction techniques, for example by pre-cutting all boards in the workshop and using collection bags to contain dust. Confine the dust by blocking off the area under construction with plastic sheeting or temporary walls. Finish drywall by smoothing with damp rags or sponges instead of sanding. Keep areas clean with a high-efficiency particulate vacuum cleaner.

A hurried production phase creates an inherently hazardous environment for collections. Even if an exhibit is behind schedule, sufficient time to complete construction and to safely mount all objects must be allowed. Before installation of objects can begin, construction of the exhibit casework must be finished, and the cases and general exhibit space aerated, preferably for three weeks. Conservation treatments have to be completed, and the performance of any environmentally controlled exhibit cases evaluated and refined.

Installation of exhibit objects is a critical phase for object preservation. Assign the responsibility of overseeing the handling and movement of objects to one person. Proceed in an orderly manner, allowing ample time to install and mount the objects. Design and, as far as possible, make mounts in advance.

Final adjustments of lighting intensity and angle occur late in the installation process, usually after objects are installed. As long as conservation criteria have been respected in the design and production of the exhibit, these last minute adjustments present few problems. Because even a slight change in the aim of a light affects the amount of radiation reaching an object, however, it is necessary to use a light meter to monitor levels.

Maintain Conservation Features in the Exhibit

The preservation-responsible exhibit process does not conclude with the exhibit opening. The design team should meet to evaluate the process, including how successfully the conservation criteria were addressed. Such a critique can reveal important lessons and identify successful strategies.

A written maintenance manual is an essential product of a preservation-responsible approach to exhibition planning and production, enabling staff to maintain the conservation criteria. Include plans and descriptions documenting the exhibit components and cabinetry; for example, how cases open. Provide instructions for reconditioning or renewing humidity adjusting substances, replenishing exhausted pollutant absorbers, changing filters in the heating and air-conditioning system, and cleaning the exhibit space and case interiors. Detailed lighting information is required, including the lamp types, wattage, and angle of direction. Establish schedules for object rotation or substitution, and note any restrictions or cautions, such as special procedures for loan objects. Use an Exhibit Maintenance Checklist to help administer the necessary tasks.

A daily inspection during the course of the exhibit will identify theft or vandalism and ensure that the objects remain securely mounted and free of infestation or other hazard.

In addition to the objects themselves, the environment in the exhibition space or specially-designed cases must be monitored. Humidity-controlled cases and pollution-control systems require scheduled maintenance, and spent lamps must be replaced with those of the same wattage, beam width, color-temperature, and filtration. Provide a budget to maintain these exhibit conservation features.

Summary

This Technical Leaflet introduces a preservation-responsible approach to producing exhibits. The conservation criteria establish safeguards necessary to preserve the specific objects chosen for the exhibit. Consider conservation early. It is more difficult and costly to alter the exhibition design later in the process. Establishing the criteria early in the process allows preservation requirements of the objects to be addressed from the initial conceptualization of the exhibit.

Once established, the conservation criteria become a touchstone during the four stages of the exhibition process: planning, design, fabrication, and installation. Institutions are urged to utilize their own in-house conservation staff, or to consult with a private conservator or conservation facility with experience in exhibit conservation. Open communication between the designer, curator, and conservator achieves a balance between the conservation needs of the objects and the practical requirements of producing an exhibit on budget and within a demanding time frame.

Drawings by Kevin Brookes taken from: Raphael, Toby with contributions from Nancy Davis. *Exhibit Conservation Guidelines: Incorporating Conservation into Exhibit Planning, Design and Fabrication.* Washington, DC: National Park Service, Division of Conservation. 1999.

Resources

CCI NOTES and Technical Bulletins. Canadian Conservation Institute, Canadian Heritage. Canadian Conservation Institute, 1030 Innes Road, Ottawa, Canada, K1A 0 M5, Canada.

Environmental Conditions for Exhibiting Library and Archival Materials. NCANSI/NISO Z39.79.199X. NISOPress Fulfillment, PO Box 338, Oxen Hill, MD 20750-0338.

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Dean, David. *Museum Exhibition: Theory and Practice.* New York: Routledge. 1994.

Hall, Margaret. *On Display: A Design Grammar for Museum Exhibition.* London: Lund Humphries. 1987.

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Telling a Story in 100 Words: Effective Label Copy

By Larry Borowsky

Consider two blocks of interpretive text for a panel in an exhibit about the Great Depression. Here's the first one:

The Dust Bowl of the 1930s was one of the worst ecological disasters in U.S. history. It was caused by severe drought and erosion, and resulted in the loss of millions of acres of topsoil throughout the Great Plains. Baca County lay at the heart of the disaster. For several years, the region got less than half the annual average of 15 inches, the longest and deepest drought ever recorded here. The land was already in poor shape due to decades of overuse, and the drought left it unable to sustain crops. Baca County farmland lost more than 80 percent of its value during the 1930s. By the end of the decade more than half of its farms were in foreclosure.

And here's the second:

First the rains stopped; then the land dried up and billowed. In those two cruel strokes, the Dust Bowl swept much of Baca County away. Swirling earth blackened the skies, jammed machinery, choked livestock, and stripped farmhouses free of paint. Since the first fields were plowed here in the 1880s, farmers had always lived with drought—but not on this scale. Half the county's residents drifted off between 1931 and 1936, often reaping no return on acreage their families had worked for 50 years. Those who remained were certain recovery lay just one thundershower away. But no one breathed easy until 1940, when Baca County soil finally brought forth a wheat crop—the first since 1932.

The first is not a bad label. It's informative and factual, and it introduces a number of important themes in a very short space. But it's also as dry as Dust Bowl dirt—a loose assemblage of facts that

Library of Congress, Prints & Photographs Division, FSA-OWI Collection [LC-USF34-018268-C DLC]

A Dust Bowl farmer and young son on a tractor near Cland, NM.

are liable to drift out of the reader's mind at the first gust of wind. The material is not binding. It's not the kind of soil in which the roots of knowledge can take firm hold.

The second one has fewer facts but, I would argue, more truth. There's a unity to it. The images are coherent, and the sentences build upon one another. This label is much stickier, much more apt to get caked under a reader's fingernails—and more likely to nourish the seeds of lasting knowledge in his or her mind.

"History, a fable agreed on, is not a science but a branch of literature," wrote Wallace Stegner in the Fall 1965 issue of the journal *The American West*. It is "an artifact made by artificers and sometimes by artists. Like fiction, it has only persons, places, and events to work with, and like fiction it may present them either in summary or in dramatic scene…. The dramatizing of legitimately dramatic true events does not necessarily falsify them, nor need it leave their meaning ambiguous. Dramatic narrative is simply one means by which a historian can make a point vividly."[1]

Dramatic narrative is dangerous territory for a nonfiction discipline such as history, and especially so when you've only got 100 words or so in which to write. What kind of story can you expect to tell in so short a space? Let's turn that question around and ask how many facts can you really convey in a 100-word label? And how many of those facts do readers carry with them when they leave the exhibit? I bet it's not a high percentage.

A reader is more likely to remember a dynamic narrative than a compendium of static facts. A narrative-driven label, if executed properly, can provoke a more powerful response from the audience than a traditional expository label, and generate a stronger sense of identification with the exhibit. To give the story room to develop, you might have to withhold a fact or two from your label, but, again, what's the value of one additional fact? Weigh that value against the value of inspiration—of having your readers get so excited about your subject matter that they seek further information about it after they've left the museum. *That* is the primary dividend of narrative-driven labels. They can stir the imagination and get visitors excited about your subject matter. They can create a springboard effect, giving visitors a reason and a desire to learn more about the exhibit's topic after they've left your museum, to seek out books and articles and films that are much longer and more information-packed than an exhibit label (even an entire exhibit) could possibly be.

Having said that, narrative labels still must contain information. They need to contain enough information so that readers who aren't inspired to pursue further reading on your subject still come away from the exhibit with a solid, basic knowledge of the subject matter. By packaging that information in a narrative form, you can both inform and inspire. Doing so requires tradeoffs and conscious choices about which facts to present, which ones to withhold, and what order they're presented in.

Here's how to go about it.

Is it a Story or Not?

Before outlining the key ingredients of a 100-word story, it seems appropriate to firm up the definition of "story" beyond the single example I cited in the introduction. As a general rule, consider a label to be a story if it produces some of the same responses in a reader that a much longer work of fiction can. Specifically, focus on the following:

1. Does it create an air of suspense and/or tension (hook the reader)?

This is a reader's most primal response to any story, the desire to know what happens next. Creating this mood can be tricky with respect to historical material, because the sequence of events and eventual outcome is often common knowledge to some or all of your readers. This is likely the case with the Dust Bowl. But even so, a well-crafted 100-word story can simulate the feeling of suspense by leaving readers vaguely unsure of where the label is headed.

Compare the two Dust Bowl labels. The first one gets directly to the resolution, using the basic form of an expository paragraph, a topic sentence up front, followed by details and evidence that support the topic sentence. It is clear and informative, but not a story. Since the outcome is stated as a *fait accompli*, the reader has no sense of working toward an unknown destination. On the contrary, you start at a known destination (the worst ecological disaster in U.S. history) and work backwards. Once you've read the first sentence, no surprises await the reader.

In contrast, the second label begins with a vague, open-ended image. No specific time or place is cited,

nor even any particular historical fact. The ecological disaster is not stated so much as described, and the description unfolds incrementally and seems to deepen with each sentence, much as the Dust Bowl unfolded and deepened year by year. Most readers probably have a general sense of where the narrative is headed. They are viewing an exhibition about the Great Depression, after all, and most American adults probably have a general awareness of the Dust Bowl. Just the same, readers naturally look for resolution, and this label does not resolve itself until the final sentence. Until they reach the end, readers are going to be hungry for that resolution. They're going to want to know what happens next, even if they already know.

2. Does it trace a journey through time and/or distance (frame the story)?

This is also integral to any story, and closely related to the element of suspense. More important, however, the passage of time is also integral to the telling of history. Events of great significance usually don't happen in an instant, but they often come across that way in a 100-word label. That is unfortunate, and it is misleading.

Again, compare the two Dust Bowl labels. The first one cannot be described as a "journey" because (as described above) it begins and ends at the same known, fixed destination. The ecological disaster is presented as something that occurred in a single stroke, rather than as a dynamic process that occurred over a long period of years. Likewise, the decade of the 1930s is presented as a single, indivisible unit of time. There is little sense of a cause-and-effect relationship between events.

In the second label, effect follows cause. First the land suffers, then farm property suffers, and ultimately people suffer. It's all presented in sequence, creating the illusion of movement through time. Reinforcing that sensation, the years 1931, 1936, and 1940 are called out by name explicitly depicting the passage of years, and framing the era with start and endpoints. As a result, the Dust Bowl comes across not as a static event, but as a progression of events, a discrete period of time with a beginning, middle, and end.

3. Does it encourage readers to suspend disbelief?

This is certainly essential for readers of fiction, but how does it apply to readers of history? Insofar as the events of a historical narrative are all true, the suspension of disbelief would seem to be unnecessary. What is really referred to here is the reader's willingness to place him or herself in an alternate world—to become drawn into a reality that exists only in the text and accept that reality on its own terms. In historical writing, this is often helpful, because it encourages readers to identify with the bygone world they're reading about—to feel, if only fleetingly, as if they're living in the past.

Library of Congress, Prints & Photographs Division, FSA-OWI Collection [LC-USF34-018262-C DLC]

A Dust Bowl farm in the Coldwater District near Dalhart, TX.

Such an effect clearly is not produced by the first Dust Bowl label, with its authoritative textbook-ish prose. But the second label achieves the effect. It encourages readers to feel, hear, and sense the events of the past as if they are really happening. *And they really did happen.* That is the whole point. Labels that nudge readers to suspend disbelief can thus produce a depth of identification that's impossible to achieve with a more expository, objective approach.

Elements of a 100-Word Story

Keep in mind that writing story labels is a matter of tradeoffs and choices. This form of storytelling is as elastic as every other form, which means that a writer often gets the best results by breaking the rules.

Don't consider the following to be rules. Think of them as guidelines—instruments that can be useful, but are not essential, when constructing a 100-word narrative. It's a short list with only three elements. They are:

- A narrative arc,
- Thematic unity, and
- A provocative first sentence.

But remember it's all about tradeoffs. It may be that one particular label works more effectively if you sacrifice a measure of thematic unity in order to sharpen the narrative arc. For a different label, you might have such a great first sentence that you just can't alter it, even though it dilutes the narrative arc somewhat. So this recipe for 100-word stories is exceedingly mutable. You can alter the ratio of the ingredients and/or substitute liberally as need, taste, and/or circumstances dictate.

Narrative Arc

That's fancy talk for saying the label needs a beginning, a middle, and an end. The beginning introduces a problem and a crisis, or an unresolved question. The middle describes the grappling with that unsolved problem, the attempts to rectify the imbalance.

Library of Congress, Prints & Photographs Division, Gottscho-Schleisner Collection [LC-G622-T01-81482 DLC]

A stagecoach at Riverside, NY.

The finale reaches a point of equilibrium—not necessarily resolution, but at least a point of stability or of change. Something has changed; the universe of the story has been altered.

Sticking with the Dust Bowl label of the introduction, what's the narrative arc? Here's the text again:

> *First the rains stopped; then the land dried up and billowed. In those two cruel strokes, the Dust Bowl swept much of Baca County away. Swirling earth blackened the skies, jammed machinery, choked livestock, and stripped farmhouses free of paint. Since the first fields were plowed here in the 1880s, farmers had always lived with drought—but not on this scale. Half the county's residents drifted off between 1931 and 1936, often reaping no return on acreage their families had worked for 50 years. Those who remained were certain recovery lay just one thundershower away. But no one breathed easy until 1940, when Baca County soil finally brought forth a wheat crop—the first since 1932.*

In the simplest terms, this narrative says:
Beginning: There was a famine.
Middle: The famine tested people's faith in the land and Providence.
End: The famine finally ended—having left a deep scar.

There is nothing too fancy about it. You can't (and shouldn't try to) get too fancy in 100 words. But thinking in terms of beginning/middle/end helps you make choices about what information to include in a label, and what information to leave off. It provides a through-line, a backbone, which every piece of information has to support. If it doesn't, the label sags.

Take a quick look at the first and last sentences of the Dust Bowl label, and note how the last sentence reflects back directly upon the first. Indeed, one could almost fuse the two sentences together to form a mini-narrative, viz.:

> *First the rains stopped; then the land dried up and billowed….no one breathed easy until 1940, when Baca County finally brought forth a wheat crop.*

Use this fusion as a shorthand way of evaluating a draft of a label. Ask yourself if the last sentence reflects back to the first one. If you only read those two sentences and nothing else, can you discern the outlines of a story? Consider these pairings:

> *Stricken with tuberculosis at 21, Doc Holliday came west in 1873 with the standard "lunger" prescription: get rest and fresh air…. By 1887 his ravaged lungs were beyond saving, and he expired within two months.*

> *In the late 19th century, towns came and went in the San Juan Mountains as abruptly as gusts of wind…. But their remnants, still visible throughout the San Juans, bear powerful witness to the enterprising spirit of the frontier.*

> *Castlewood Dam backed up enough water to irrigate 30,000 acres—or would have, if it didn't leak so badly…. the flood devastated farms in this area and tore out six bridges in Denver, thirty miles downstream.*

In every case, the last sentence is a natural extension of the first. So no matter what information you pack in between, the whole thing is going to hang together.

Thematic Unity

More fancy language, which means, in this case, that a 100-word label can only be, ultimately, about one thing. In the Dust Bowl example above, the one thing is *the land blew away.* Look at how the word choices reinforce that unifying theme:

> *First the rains stopped; then the* ***land*** *dried up and* billowed. *In those two cruel strokes, the Dust Bowl* swept *much of Baca County away.* Swirling ***earth*** *blackened the skies, jammed machinery, choked livestock, and stripped farmhouses free of paint. Since the first* ***fields*** *were* ***plowed*** *here in the 1880s, farmers had always lived with drought—but not on this scale. Half the county's residents* drifted off *between 1931 and 1936, often reaping no return on* ***acreage*** *their families had worked for 50 years. Those who remained were certain recovery lay just one thundershower away. But no one* breathed *easy until 1940, when Baca County* ***soil*** *finally brought forth a wheat crop—the first since 1932.*

The words in **bold** all refer to the land; the words in roman text, to wind. So the language itself is structured to reinforce the storyline of the Dust Bowl. Look at another example:

> *Admirers said William "Billy" Adams* ***shot down*** *more bad laws than any legislator in Colorado history. During forty years as a state representative and senator (1886-1926), the Alamosa rancher won* ***countless battles*** *for his working-class constituents. He* ***muscled*** *wage supports, agricultural*

loans, child-labor laws, and mine-safety statutes through the legislature, as well as the bill authorizing Alamosa State College (now Adams State). Most important, he ***led a heroic stand*** *against the Ku Klux Klan, whose allies controlled the legislature during the 1920s. Adams used parliamentary tactics to* ***beat back*** *the KKK faction and then, in 1927, defeated its candidate in the gubernatorial race. He served three terms in that office and retired in 1933, having never lost an election.*

What do these words in **bold** tell you about Billy Adams? He was a strong man, a fighter. We could come right out and say that in a single expository sentence—"Billy Adams was a fighter"—but the statement has no resonance. Embedded within a narrative, in a suite of coordinated images, the assertion carries far more power and makes a much greater inpact on the reader.

A Provocative First Sentence

A good first sentence has three main purposes. It should:

A. Convey information,
B. Raise an unanswered question (hook the reader), and
C. Frame the theme of the story.

You can't always achieve all three of these objectives in a first sentence—indeed, sometimes you don't even want to achieve all three. But when I'm writing my first sentence, I always evaluate it in terms of these three criteria. Let's take them in order.

A. Convey information

In a 100-word label, there's no room to waste; every sentence has to convey information. But that doesn't mean every sentence has to be an expository statement of fact. On the contrary, you can pack plenty of information in a sentence that seems less a statement of fact than a flippant opinion, like this one:

Stagecoach passengers on the Butterfield Overland Despatch stood a better-than-even chance of surviving the journey to Denver.

There doesn't seem to be as much information in that sentence as there would be in a sentence such as "The Butterfield Overland Despatch operated from 1865 through 1870, carrying passengers from Joplin, Missouri to Denver." Or this one: "From 1865 through 1869, the Butterfield Overland Despatch was the only regularly scheduled transportation service to the Rocky Mountain region." But the sentence does convey a lot of facts; it just doesn't state any of them directly. It tells readers that:

- The Butterfield Overland Despatch was a stagecoach line.
- It carried passengers to Denver.
- It crossed terrain that must have been dangerous.
- It operated in the nineteenth century.

The last bullet point, the time frame, is not stated directly, yet many readers will be able to infer it—they've watched enough Westerns to have formed a rough association between stagecoach travel and the nineteenth century, and/or they know enough about early Denver settlement to make the connection. (The panel appears at a roadside history exhibit near Denver.) Just to make sure no reader misses the point, the implied time frame will be made explicit in a later sentence:

Stagecoach passengers on the Butterfield Overland Despatch stood a better-than-even chance of surviving the journey to Denver. That was the good news. The bad news? They had to endure hour after punishing hour on the coach's wooden bench, bouncing over prairie trails in hot, dusty, stifling misery. Although Butterfield used that era's most comfortable coaches (Concords), travelers suffered from the very first mile. Even the price ($75 one way from Kansas City) hurt. But travelers had no better option during the Butterfield's years of operation (1865-1870)—the railroads wouldn't be complete until 1870. And if they happened to pass the corpse-littered scene of an Indian attack, those road-weary passengers swallowed their complaints. Things could always get worse.

So while this first sentence does convey information, it defers certain pieces of "introductory" information (i.e., the time frame) in order to meet the other two objectives (i.e., raise an unanswered question and set up the rest of the story). This is a tradeoff that should be made consciously. You need to balance the three objectives.

Let's quickly look at another example:

Juan de Oñate may have built a fort beneath the Spanish Peaks in 1598—but maybe not.

Without having been told directly, the reader knows the following facts:

- Juan de Oñate lived in the late 1500s.
- Judging by his name, he was Spanish or Mexican.
- He must have been a soldier or explorer, because he built forts.
- He might have traveled in the vicinity of the Spanish Peaks.

We could state all those things directly: "In 1598, the Spanish conquistador Juan de Oñate led a group of 25 men from Santa Fe into this region." But that wouldn't achieve Objective 1 (hook the reader) or Objective 2 (frame the story). To show you what I

mean, let's stick with this example.

B. Raise an unanswered question (hook the reader)

While the first sentence has to provide information—to fill gaps in the reader's knowledge—it's just as important for the sentence to create gaps in the reader's knowledge by asking an unanswered question. In this example, the unanswered question is explicit, "Did Juan de Oñate build the fort or not?" The reader's curiosity is naturally aroused, and he or she has a strong incentive to keep on reading—to get the answer to the unanswered question. That is the air of suspense mentioned in the previous subsection.

In this example, it so happens that we're unable to provide the answer to the unanswered question of the first sentence:

> *Juan de Oñate may have built a fort beneath the Spanish Peaks in 1598—but maybe not. Another Spanish explorer who ventured into this region, Antonio de Valverde, supposedly erected a post nearby in 1719. Who can say for sure? So many legends surround these mountains that it's impossible to tell fact from fiction. The Utes called them Huajatolla—"breasts of the earth"—and believed vengeful spirits haunted the slopes. Spanish prospecters coveted the peaks' treasures but dreaded their power; one explorer swore he saw fire shoot forth from the crest. Visible from 100 miles off, these landmarks guided 19th-century travelers, but most kept a respectful distance away just in case.*

This is a question we can't answer. But that's kind of the point. In this case, the Spanish Peaks possessed a mystique, and even today there are legends and rumors about them that historians can neither confirm nor refute. (Note that most of the implied information in the first sentence is made explicit in the next sentence—Oñate was, indeed, a Spanish explorer.)

Take a look at this one:

> *Castlewood Dam backed up enough water to irrigate 30,000 acres—or would have, if it didn't leak so badly.*

There is some good information here. Castlewood Dam was built to irrigate local farms, and it apparently had some structural problems. But what's going to keep people reading? Are the unanswered questions implied by the reference to the leak? Did the dam eventually burst? And, assuming that it did, what happened afterwards?

> *Castlewood Dam backed up enough water to irrigate 30,000 acres—or would have, if it didn't leak so badly. The seepage began the year the dam was completed (1890); within seven years, a 100-foot section of the earthen barrier had crumbled. Engineers made repairs and vouched for the structure's soundness, and local farmers—who needed the water—trusted them, even though the leaking continued on and off for decades. On August 3, 1933, the inevitable happened. Castlewood collapsed, releasing a two-billion-gallon tidal wave down Cherry Creek. Only two people drowned, thanks to a switchboard operator's life-saving calls, but the flood devastated farms in this area and tore out six bridges in Denver, thirty miles downstream.*

So the rest of the label provides the answers to the questions raised in the first sentence.

Note how many expository elements are slipped in throughout the narrative.

- Year of completion? **1890**
- Composition of the dam? **Earth**
- Stream dammed? **Cherry Creek**
- Location? **Thirty miles from Denver**

We might have dispensed with all this information in a single expository sentence: "Built in 1890 on Cherry Creek, 30 miles upstream of Denver, Castlewood Dam backed up enough water to irrigate 30,000 acres." Sure it's informative, but it's boring. It doesn't pique our interest or make us want to learn more about the subject.

C. Frame the story

Continue with the first sentence about Castlewood Dam. The choice of detail, and the presentation thereof, sets up this label as a story about misplaced faith in technology, about humankind's inability to ever truly tame nature, and about hubris and humility. If one wanted to frame the story differently—say, as a story about heroism in the face of calamity—one would make different choices in the composition of the first sentence.

So before you write that sentence, you have to know what kind of story you want to tell. The rest of the story should hang off that first sentence the way a coat hangs off a hook on the coat rack.

Beyond the 100th Word—the Untold Story

Consider the following 100-word story:

> *Stricken with tuberculosis at 21, Doc Holliday came west in 1873 with the standard "lunger" prescription: get rest and fresh air. Instead he drifted like a contagion, drinking and gambling his way from Dallas to Dodge City to Tombstone. Hot-tempered and reckless, he killed a poker rival in 1880, his first—and maybe last—murder; most of Holliday's attempts failed because his wheezing and boozing made him an unsteady shot. Still, he was dangerous—striking suddenly and at random,*

making brave men uneasy, just like his disease. By 1887, when Holliday moved into the Hotel Glenwood, his ravaged lungs were beyond saving. He expired within two months.

A reader is going to form a certain impression of Doc Holliday from this label, but he or she also might come away with it with a few questions about the subject. For example:

- Where did Doc Holliday come from?
- Why did he ignore his doctor's orders?
- Why did he kill that rival poker player?
- Why didn't he go to jail for it?
- What's a lunger?

These are all good questions, and it is not bad that they're left unanswered. On the contrary, it's consistent with the storyline to leave them unanswered, insofar as the narrative equates Doc Holliday with an impersonal force of nature—a contagion, an epidemic. Who knows where a virus comes from? Who knows why it acts as it does? Doc Holliday always has been a mythic figure, and this label acknowledges and respects that status. He remains a sketchy, somewhat outsized figure in this telling. But the label still dispels the myth of the Wild West gunslinger as somebody endowed with superhuman powers. On the contrary, in this story the gunman is only too human—he is what he is because of his own mortality and his frailties. We don't encourage the reader to reflect on these things unless we leave a few blanks for him or her to fill in. So I would argue that the existence of these unanswered questions actually strengthens the label.

Unanswered questions also provoke curiosity and can motivate the reader to seek answers on his or her own, after leaving our exhibit—and that is surely one of our goals. However, if a given curator was uncomfortable with this level of ambiguity, unanswered questions can always be addressed without damaging the overall narrative:

Stricken with tuberculosis at 21, Doc Holliday came west ***from Philadelphia*** *in 1873 with the standard prescription: rest and fresh air. Instead,* ***seemingly gripped by a death wish, he drank and gambled*** *his way from Dallas to Dodge City to Tombstone. Hot-tempered and reckless, he shot a man in 1880* ***during a cardroom dispute****—Holliday's first, and maybe last, murder (****he was acquitted on a self-defense plea****). Most of his shootings failed because his wheezing and boozing unsteadied his aim. Still, he was dangerous—striking suddenly and at random, making brave men uneasy, just like his disease. By 1887, when Holliday moved into the Hotel Glenwood, his ravaged lungs were beyond saving. He expired within two months.*

This version is only ten words longer than the original, but it addresses all of the questions on the bullet-pointed list above (answers in **bold**):

- Where did Doc Holliday come from? **Philadelphia**
- Why did he ignore his doctor's orders? **Seemed to have a death wish**
- Why did he kill that rival poker player? **Cardroom dispute**
- Why didn't he go to jail for it? **Pled self-defense**
- What's a lunger? **N/A**

The tradeoff here is that, in order to include the "death wish" text, we lose the "drifted like a contagion" metaphor. I think it's a losing exchange. To answer that question adequately, it would take a whole chapter (or more) of a book. It's a complex question without a pat answer. We only have enough space here to provide a hasty answer to the question, one that will still leave many readers unsatisfied. The contagion metaphor gets closer to the truth. He ignored the prescription for health because he was flat-out unhealthy. One might as well ask why a germ kills its own host, and thereby destroys itself. It's simply in the germ's nature to do so. Live for the moment and damn the consequences—that's as good an answer to the question as any.

Let's take another example:

In its own way, Brown's Hole circa 1890 was the very picture of frontier law and order. People generally got along with their neighbors and minded their own business, and no wonder—their business sometimes included cattle rustling, bank robbery, tax evasion, or worse. Safe from the authorities' prying eyes, wanted men such as Butch Cassidy, Black Jack Ketchum, and Isom Dart lived peacefully in this inaccessible valley. Almost everyone was welcome—except men with badges. One lawman who'd chased a fugitive across most of Wyoming stopped his pursuit when it reached Brown's Hole and handed the case off to a man named Philbrick—who was himself wanted in three states.

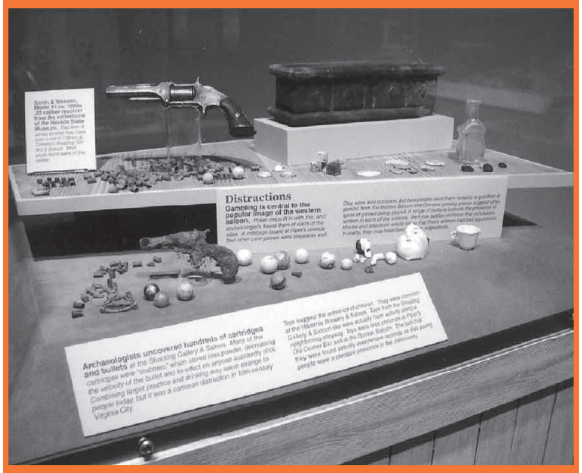
But hold on a second—

- Where was Brown's Hole?
- Who were Black Jack Ketchum and Isom Dart?
- Why didn't authorities just raid the place?
- Why did the law-abiding residents tolerate these criminals?

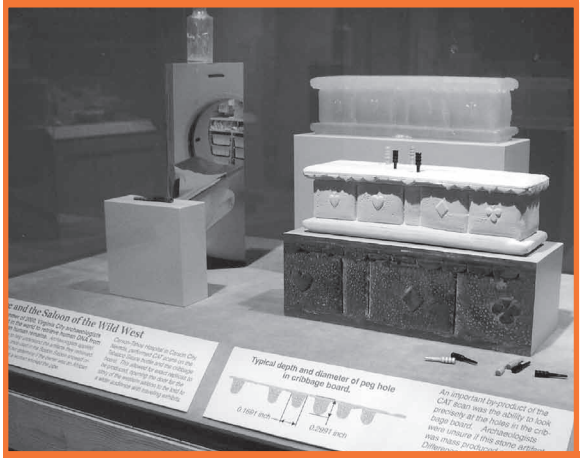
I cite this example to suggest other, non-textual ways of answering the questions. The first one is simple enough, include a map on or near the label that shows the location of Brown's Hole (it's in extreme northwestern Colorado). The second question can be answered in captions accompanying photographs of Ketchum and Dart (the former was a train robber, the latter, a cattle rustler). The third

All photos from Nevada State Museum, Carson City, NV

A narrative-driven label, if executed properly, can provoke a more powerful response in the audience than a traditional expository label and generate a stronger sense of identification with the exhibit.



In a 100-word label, there's no room to waste; every sentence has to convey information.



Labels that nudge readers to suspend disbelief can produce a depth of identification that's impossible to achieve with a more expository, objective approach.

question also takes a graphic answer. Topography made a raid out of the question, so a topographical map or illustration is in order. A caption might cite a description of the citadel's impregnability contained in a U.S. marshal's report.

As to the last question—I think this one is best left to the reader's imagination and curiosity. Much like the question of why Doc Holliday didn't obey his doctor's orders, this one admits no easy answers. There's a complex dynamic at work, one that would require many pages to illustrate adequately. It is best merely to drop a hint and try to prod readers to investigate on their own.

Conclusion

The point I would like to conclude with—one I've returned to throughout this essay—is tradeoffs. There's no right or wrong way to write an exhibit label, nor is there a hard delineation between an "expository" label and a "narrative" one. Most labels contain both elements out of necessity. The question the writer must answer is this: what is the proper balance to strike among these elements? What effect do I want to achieve? What do I want my audience to walk away with?

When we write, we compose a mosaic. We pick and choose the "tiles" (the words, facts, and images) we want to include, and which ones we want to withhold. We pick and choose the shape and arrangement of the tiles. In a 100-word label, the number of available tiles is far greater than the available space, so the use of one tile necessarily excludes the use of many others. That makes each choice an extremely important one. The key to writing good text is to make those choices deliberately—to weigh what is gained and what is lost if I swap out tile B for tile A; if I tilt a given tile at an angle instead of lodging it square; if I pack my tiles densely or disperse them unevenly.

If I follow this process, I end up with labels that make the most of that 100-word space—labels that not only convey facts but also hint at truths; labels that not only inform but also entertain, maybe even enchant.

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[1] Wallace Stegner, "On the Writing of History," *The American West* (Fall 1965): 7-8.

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Families First! Rethinking Exhibits to Engage All Ages

By Anne Grimes Rand, Executive Vice President; Robert Kiihne, Director of Exhibits; and Sarah Watkins, Curator USS Constitution Museum

The Problem: A nationwide survey of 5,500 museum-going families in 2007 indicated that history museums are the least popular with today's families. When families chose among eight different types of museums, only twenty-three percent chose to visit history museums.[1]

The Opportunity: The likelihood of visiting a history museum or historic site increases in families with grade-school-age children who are beginning to learn about history. There is a window of opportunity for museum professionals to entice families to visit, especially by developing special programs and exhibits that target this audience. If museum professionals share effective techniques for engaging an intergenerational audience, history museums can appeal to more families. This demonstrates their value to the local community as fun and exciting places for hands-on learning.

Proposed Solutions: At the USS Constitution Museum, we wondered if there were simple, low-cost techniques to encourage family learning and conversation in the galleries that might work in different history museums.

The Institute of Museum and Library Services provided the necessary resources to explore this question through a 2004 National Leadership Grant. With the assistance of a steering committee, a study of best practices, and a prototype gallery where staff interviewed over 2,000 families, we learned a great deal about how to encourage families to laugh and learn together in a history museum. This technical leaflet is a summary of findings from three years of studying intergenerational interaction within the USS Constitution Museum's prototype exhibit in Boston. A more detailed explanation of the project findings is available at www.familylearningforum.org. While the content we tested explored seafaring in the age of sail, the techniques identified in this article and on the website are adaptable to a wide range of history museums. The goal of this publication is to share replicable techniques and approaches that have proven to be successful at engaging family audiences in history.

Family Learning in Museums

Families are the first learning community that a person experiences. When families visit a museum, there is an opportunity to engage the family in compelling experiences. John Falk and Lynn Dierking in *Learning from Museums* observe that "museum exhibitions and programs, when done well, support opportunities for families to participate in and become more effective communities of learners, allowing group members to share, watch one another, have a new and novel experience, reinforce something they already knew, or see something in a new way.… All of this contributes to a highly personal experience, which is all important if meaningful learning is to occur." The experience of visiting an exhibition together, exploring the past, comparing it to the present, and solving problems together builds a shared memory that lasts long after the visit to the museum.[2]

Family learning in a museum may take many different forms. When visitors engage with one another, as well as the content of the museum exhibit, family learning is likely to occur. The Children's Museum of Indianapolis describes the characteristics of family learning in this way:

- Family learning is a playful, fun, and social experience.
- Family learning is influenced by the ages of the children and adults in the group.
- Families all learn in different ways.
- Families find value in their own personal observations and experiences; they learn by working, talking, and solving problems together.[3]

Increasing family visitation has benefits in both the short and long term. Falk and Dierking report that the adults who are most likely to bring their families to a museum are those who visited museums with their parents as a child. Engaging a family audience today will increase present visitation *and* build a pattern of family museum visitation into the future. Exhibits and programs that engage visitors of different ages and learning styles create greater opportunities for learning within a museum. Engaged visitors spend longer discussing the activity or exhibit, and their satisfaction increases. When visitors are engaged in a compelling experience, they are more likely to stay longer, make a donation, plan a return visit, or become a member.

I. Putting Families First

When the USS Constitution Museum put families at the center of exhibit development, it led to a radical shift in our thinking and creative process. Families first meant social interaction was as important as conveying content. If visitors are bored, very little content will be delivered, much less remembered a week later. If visitors have a great experience they will remember content long after leaving.

Families first also meant that we could not assume we knew what was best. Instead we let families tell us what they are interested in, how they want to learn about the topic, and what makes the topic compelling, memorable, personally relevant, and enjoyable. We discovered that designing a thematically organized exhibit facilitates family learning more than a chronologically organized exhibit. Thematic organization allows families to bounce around naturally

Photos Greg Cooper courtesy USS Constitution Museum

The prototype gallery at the USS Constitution Museum offers hands-on opportunities for visitors of all ages to sample life at sea.

and bypass areas altogether. By encouraging positive group interactions and using humor within the exhibit, families were more receptive to learning.

Allowing families a voice in the exhibit development process had an unexpected benefit for the exhibit's in-house steering committee. The USS Constitution Museum's planning team included members of the curatorial, exhibits, and education departments. We learned that letting the visitors decide eliminated a lot of interdepartmental debates. Testing ideas with the visitors was also very freeing. Instead of getting too invested in any one idea or arguing over whose idea is better, we let it go and directly asked the visitors what they thought.

II. Crafting a Compelling Experience

Use Interactive Elements to Convey Key Messages

Certain exhibit concepts or stories that are important to the museum may be difficult for visitors to grasp. There may be few if any artifacts or images to support these concepts. These concepts many be perfect candidates for interactives. Visitor tracking studies at the USS Constitution Museum demonstrated that families stop at interactives more than any other kind of exhibit.

In 2005, the museum tested an interactive that illustrated just such a topic with family visitors, recruiting a crew for the USS *Constitution* in 1812. There are almost no objects or images related to recruiting, but understanding why someone would join the crew was vitally important to the exhibit team. The recruiting station is a simple two-sided tabletop interactive with questions on one side and a related image on the other. Questions are slightly humorous and relate to a person's skills, health, and sailing experience, foreshadowing the exhibition to come. Questions include: Have you ever swung in a hammock? Are you willing to do it next to 200 of your closest friends who haven't taken a bath in a while? The exhibit team hoped to encourage conversation about what it meant to be a sailor in 1812.

Families at the USS Constitution Museum consider the life of a sailor in 1812 and discuss questions such as, "Are you willing to work a four-hour shift before breakfast?"

The USS Constitution Museum designed interactive exhibit elements that met the PISEC criteria, [see sidebar] then subjected them to rigorous formative evaluation. This resulted in a series of interactive experiences that encourage family participation and conversation. Tracking studies show that families spend three times longer in this hands-on exhibition than in our larger, more traditional history display. Satisfaction is higher and visitors are absorbing exhibit themes while laughing and learning together.

Multi-sided Exhibits Take Up More Space, But That's OK!

One PISEC characteristic that can be extremely effective comes at a cost. Multi-sided exhibits take up a larger footprint, easy for a cavernous science museum, but a challenge for history museums with limited gallery space. Creating an exhibit element that is multi-sided also reduces available wall space, but it's worth it!

The benefit is changing how visitors use your museum. Families gather around multi-sided exhibits, interacting as a group rather than as individual museum-goers. The resulting conversations can be the highest form of visitor engagement.

Integrating Learning Styles

Museums are free choice learning institutions. Understanding the different ways people prefer to learn can help us broaden our exhibit's appeal, increase visitor engagement, and spur new methods of exhibit interaction. People do not learn by reading alone. Museums are an ideal environment to teach using a variety of learning styles. Addressing a

PISEC

The Philadelphia/Camden Informal Science Education Collaborative (PISEC) identified seven characteristics to promote family learning.[4]

- Multi-sided—the family can cluster around the exhibit.
- Multi-user—interaction allows for several sets of hands and bodies.
- Accessible—the exhibit can be comfortably used by children and adults.
- Multi-outcome—observation and interaction are sufficiently complex to foster group discussion.
- Multi-modal—appeals to different learning styles and levels of knowledge.
- Readable—text is arranged in easily understood segments.
- Relevant—the exhibit provides cognitive links to visitors' existing knowledge and experience.

Try this test: *Take the PISEC criteria into your galleries and see how many criteria your exhibit elements meet. Are there simple modifications you could make to meet more of the PISEC guidelines?*

different learning style need not equal dollar signs. For example, charts or visual representations can sometimes present information in a way that appeals to visitors with strength in math or logic.

Try This Test: *Print a list of learning styles, such as Howard Gardner's multiple intelligences, and see how many of these techniques you employ in your exhibitions. This is a great exhibit-planning tool to see if you are creating experiences for different types of learners.*[5]

III. The Power of Prototypes

Prototypes can take many forms. The form depends on what the final exhibit will be and upon where you are in the process. Show a few versions of a label on a clipboard and you can quickly find out if families interpret the label as your exhibit development team intended. A paper and cardboard mock-up can test an idea with staff and a few family, friends, or visitors. Observing visitor flow near a neatly posted paper directional sign can show if your signage will do what you need it to, before investing in expensive, ineffective signage. Even a cheap plywood and laminate version of an interactive that can be tested on the floor is much less expensive than a finished version—especially if the final version is not successful. Exhibit prototypes can test:

- Functionality—Will it work?
- Clarity—Do visitors understand how to interact with the exhibit?
- Comprehension—Do visitors understand the exhibit's key idea or story?
- Interest—Do visitors want to engage with the exhibit? Do they unexpectedly show interest in certain elements?

Be Prepared to Revise Exhibits

Information gained from prototyping and visitor observations will most likely lead to exhibit design changes—changes that will improve the visitor experience and opportunities for learning. A favorite idea among the exhibition development team may not work and may need to be abandoned. You must know what you are prototyping for, and be open to unforeseen outcomes.

Prototyping (a form of formative evaluation) is an iterative process. *Draft. Test. Modify. Repeat.* Many times during prototyping, the audience may suggest changes and additions exhibit developers had not considered that improve the product significantly. To get an overall feel for visitor satisfaction, it can be helpful to ask visitors to rate each interactive (like a movie with a five-star scale). The USS Constitution Museum kept modifying each exhibit element until the average visitor ranking reached four-and-a-half stars. The museum has come to see formative evaluation as making their family audience a partner in exhibit development.

FORMATIVE EVALUATION

Formative evaluation is conducted when you have something to show your audience.

You might try testing:

- A draft of text panels, instructions, or even object labels
- Graphics (charts or illustrations)
- Interactive prototypes (ideas in a 3-D form—cardboard & masking tape are okay)
- Rough cuts of media pieces

Visitors scrub the deck with a holystone and discuss the life of a sailor in 1812. At the suggestion of visitors we added sand and made a more satisfying and authentic experience.

IV. Engaging Text: Short & Sweet

Developing content for a family audience at the USS Constitution Museum challenged us to convey history in a way that appeals to both adults and children. Some people felt this would mean "dumbing down" the story. Instead it led us to think thematically, choose information that best supports the themes, and layer content in creative ways.

We knew that our visitors did not want a book on the wall. So we gave ourselves the goal to limit our text panels to fifty words. Fifty words is brutally short, but it forced us to focus. For each panel, we asked ourselves, what is the main point we want to convey?

The short segments of text carry the themes in an engaging, conversational manner that reflects the perspective of the speaker (a crew member). These labels were unlike any we had ever written. Once we gained confidence in this new method, we discovered that label writing could actually be fun. Instead of dry, academic report writing, these labels turned into a creative writing exercise. We learned to have fun with word choice (i.e. "buddy" instead of "friend"). By simply changing the voice from third- to first-

person, the same content suddenly came alive. Some of our NEH-sponsored scholars were our toughest critics going into the process and our greatest supporters upon its completion.

The Proof is in The Numbers

The museum tracked and timed family visitors through two exhibitions: our traditional *Old Ironsides in War and Peace* exhibition and our family-focused prototype exhibit *A Sailor's Life for Me?* We found that family visitors spent an average of seven minutes in *War and Peace*, a 3,000-square-foot exhibit with many long text panels totaling nearly 4,500 words, sensational objects, and a few interactives. *A Sailor's Life for Me?* is only 2,000 square feet and contains about 1,500 words of text, but families spent nearly twenty-two minutes in the smaller exhibition. Just as important, families also talked to each other significantly more than in the *War and Peace* exhibition.

Using Questions and Quotes—A Research Study

Which technique is more effective to promote conversation?

The museum wanted to identify questioning techniques that encourage family conversation, so we tested three types of labels. We asked if visitors preferred:

- An actual historic quotation from a sailor
- A historic question that put them back in time, "What would you do in this situation?"
- A contemporary question bridging past to present such as "Have you ever been in a similar situation?"

Three hundred families commented on label text accompanying the cut-out figures in a pilot study before the prototype exhibit opened. A first-person context label accompanied each of three cut-out figures throughout the study.

Historic Quotation: "The most disagreeable duty in the ship was that of holystoning the decks on cold, frosty mornings." —Samuel Leech, 1810

Almost half of of the family members interviewed preferred the historic quote labels and sixty-three percent of males prefer historical quotations. Visitors stated they preferred historic quote labels because the content was accurate and authentic, provided a personal connection, and provided historical perspective.

Historical Question: *"Can you imagine being a sailor starting off your day with a cold saltwater scrub rather than a hot shower?"*

One-third of visitors and forty-seven percent of females prefer historical questions. Visitors expressed that these labels fulfilled their need for thought-provoking content and that the questions' open-endedness was more engaging.

Contemporary Question: *"What is the chore you dread the most? How often do you have to do it?"*

Fewer than two in ten visitors preferred the contemporary question. Due to this low response, we eliminated the contemporary question from the rest of the study after the pilot phase.

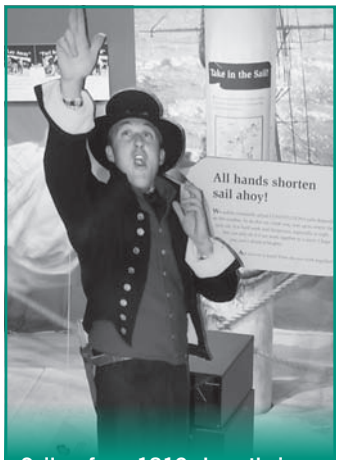
Summary: *When shown three types of labels, visitors showed a strong preference for both historic quotations and historical questions.*

What happened when visitors encountered these labels within the exhibit? Which were more effective at encouraging conversation? Staff observed over 550 visitors and recorded their behavior in tracking and timing behavioral studies. Visitors engaged in conversation with the historical question labels three times more often than with the historic quote labels. This highlights the importance of using different research tools to understand visitor preferences and behavior. The findings are not contradictory, as a visitor may prefer to read an authentic quotation to learn about the past directly; however, if an exhibit developer's aim is to encourage family conversations about the topic, the historical question is a more powerful technique.

Summary: *Posing a question is three times more likely to encourage visitor conversation than simply presenting information or a historic quotation.*

Peopling History

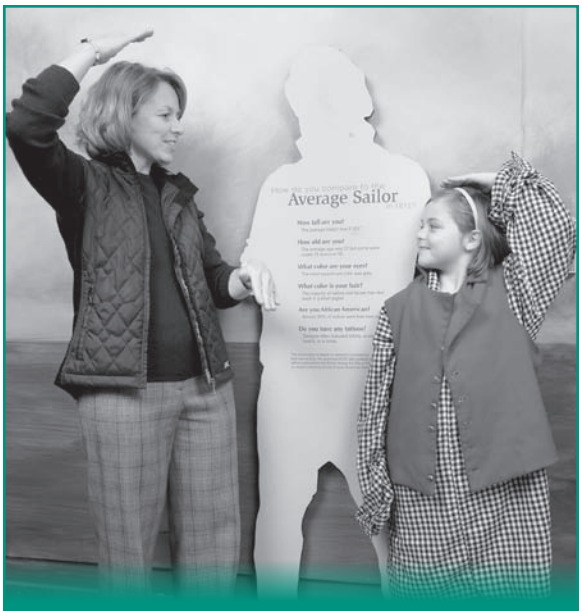
Our exhibition set out to reinterpret the USS *Constitution* by offering the human perspective. This interpretive strategy resonated with our family audience. By personalizing the story and telling it through people, our visitors connect on a personal level and can feel empathy for what the sailors went through and as a result are better able to imagine themselves in the sailors' shoes. To help bring the crew to life, full-scale photo cutouts visually "people" the exhibit and the text is written as if visitors are hearing sailors' stories first-hand. Because we illustrate a diverse range of crewmembers and the families they left behind, minorities, women, and children who may not expect to see themselves in our exhibition can make emotional and intellectual connections.



Sailors from 1812 share their experience through first person text and invite museum visitors to consider how their life today compares to 200 years ago.

The audience research we conducted focused on how to present personal narratives in engaging ways to foster personal connection between visitors and stories.

We tested different types of interpretive labels



How do you compare to an average sailor in 1812? Simple, direct questions compare today's visitors to sailors in 1812 and make statistical information relevant and fun.

accompanying a photo cutout and learned that sixty-four percent of visitors preferred labels written in the first-person as opposed to a third-person curatorial voice. Visitors reported that they preferred the conversational voice because it felt like the historical cutout was speaking directly to them.

When asked about the first-person approach, one visitor to our prototype exhibit commented:

> *"When I come to a history museum I want my family to hear it from the people who lived it, not a secondhand dry account. History should be alive and this type of label gives you a chance to be a part of that."*

V. Steal this Idea!

Here is a collection of simple, cheap, effective, and tested techniques that have worked in other exhibitions and may be applicable in your museum.

Making Work Fun

Children visiting Conner Prairie living history museum will sweep the floor, make the bed, or wash dishes when asked to by costumed interpreters. At other museums, children churn (imaginary) butter in Indianapolis, build a (foam) stone wall at Sturbridge Village, carry buckets of (imaginary) water at the Wenham Museum, and scrub the deck at the USS Constitution Museum. These full-body kinesthetic experiences are both an outlet for energy and a moment to pause and reflect on the similarities or differences between the past and the present. These activities set the seed for a conversation at home, when water rushes effortlessly from the tap, or butter comes neatly wrapped in paper.

Try a Board Game

Board games are a familiar form that can take advantage of successful pre-visit family interactions. They can also offer seating, a welcome rest within a museum visit. Through the roll of a dice, games can also highlight the role of chance in determining the final outcome. Games can be used as a summary element, to review content presented in the exhibition. Games have proven to be effective, engaging, and inexpensive. Families sit, smile, and converse, laughing and learning together.

Involve the Senses

An exhibit is more likely to be effective if a variety of exhibit techniques address a range of senses. Smelling the pine tar in the ship's rigging or the salted cod carried in barrels creates a more vivid experience than simply reading about life at sea. When visitors climb in a hammock or get on their knees and scrub the deck, it is a full body experience. These are the activities eliciting the most comments in exit interviews at the USS Constitution Museum, and the elements most frequently recalled, even years after a visit. The Chicago History Museum created an exhibit for children called *Sensing Chicago.* Based on front-end and formative evaluation with children, the exhibit uses the senses as a window to history—smell the fire of 1871, hear the roar of the crowd at a baseball game, or climb into a giant foam roll and see what it feels like to be a famed Chicago hot dog with all the trimmings.

Try This Test: *Walk through your exhibitions and see how many senses you engage.*

Discovery

A surprise element hidden within an exhibit becomes a family's discovery. Discoveries can trigger conversation and encourage visitors to slow down and take a closer look. Simply hiding a light-sensitive document or small item like a coin can enhance its importance; the discovery becomes a moment to share with another family member. In food barrels at the USS Constitution Museum, visitors discover a rat eating the sailors' food. In exit interviews, it is one of the elements most frequently mentioned by visitors. Offering a surprise is a reward that can encourage closer exploration of an exhibition.

Flipbook / Questioning Interactive

The flipbook is a simple tabletop activity that consists of pages with questions or information viewable from one side of the table and a related image viewable from the other side of the table. At the USS Constitution Museum, we used this format to let visitors play the roles of recruit and recruiter, asking one another fun questions related to their suitability as a possible sailor in 1812: "Are you willing to eat bread as hard as a brick?" This questioning interactive engages

both young and old visitors. It invites the audience to rest for a moment and consider the content. It links your visitors' experience to the past, providing an opportunity to compare and contrast life today with life in a past time. The flipbook works because it requires conversation. You cannot really do the activity alone. Almost any content could be adapted to this form. Many families spent significantly longer with the interactive than needed to finish because parents discussed the questions with their children.

Comment Boards

Rather than limiting the flow of information from museum to visitor, comment boards or books offer visitors an opportunity to share their thoughts and state their opinions. It moves an exhibition closer to a discussion rather than simply a presentation from an all-knowing authority. Visitors like to see what other visitors have written. Comment boards can be very helpful tools for exhibit developers to see if key messages are reaching visitors. Positive comments are also a powerful tool to demonstrate the impact of the museum experience; to motivate staff, volunteers, and board members; and to leverage future funding.

VI. Conclusion

At the USS Constitution Museum, the focus on family learning has revolutionized the organization. The audience is seen as a partner in exhibition development rather than a passive user of the end product. This mindset has spread through the institution, as we test sample signage and even fundraising appeals with members of the target audience. This approach can be liberating, as decisions fall to the audience, rather than to the team member with the strongest argument. The exhibit galleries have come to life with the active participation of museum visitors young and old. Instead of the quiet, reverential tone of a staid art museum, our galleries include conversation and active participation. We have even found visitors swinging in hammocks and singing sea songs.

Who will be promoted first? The Constitution Challenge game quizzes visitors on the content presented in the exhibit and introduces the element of chance (bad weather, bad luck, etc.).

SUMMATIVE EVALUATION

Are exhibits and programs ever really finished? Summative Evaluation addresses questions such as:

- Do visitors understand which way you intend them to go?
- Can they find instructions or key text panels?
- Do graphics make sense in place?
- Are there elements of the exhibit everyone seems to miss?
- Does your audience understand the major themes of your exhibit or program?
- How much time does the average visitor spend in the exhibit or program?

Try this test: *Visitor tracking, timing, and behavioral coding are simple, effective, and honest. Grab a copy of the floor plan and observe your visitors in the exhibition. Where do they stop? What do they interact with or read? Do they talk to each other about your content? How much time do they spend in each part of your exhibit?*

Trustees and staff have taken notice of two key facts:

1. Visitors to the hands-on prototype *A Sailor's Life for Me?* spend three times longer in the gallery than visitors to the traditional *War and Peace* gallery.
2. Voluntary contributions per museum visitor have increased from an average of thirty cents between 2000 and 2005 to fifty-one cents per visitor since the installation of the hands-on prototype in 2006.

Since the USS Constitution Museum does not charge admission and relies heavily on voluntary donations, an increase in visitor satisfaction that results in a sixty percent increase in per-person donations is significant. With more than 250,000 visitors to the galleries in 2007, donation box revenue topped $150,000. The Board of Trustees voted to adopt a new strategy: The USS Constitution Museum will provide a hands-on, minds-on environment where intergenerational groups seeking an enjoyable, educational experience can have fun and learn as they explore history together.

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Exhibit Makeovers: Do-It-Yourself Exhibit Planning

By Alice Parman

Do you remember the first time you visited a museum? How old were you? Who was with you? What impressions and memories can you conjure up? There may be a connection between those long-ago experiences and your current involvement with a museum or historical site. Tapping into your personal history can help you identify and empathize with your visitors—a necessary first step toward planning engaging, memorable exhibits.

As part of your volunteer or paid museum work, you may have the opportunity to develop a new exhibit a case, a group of displays, or even an entire gallery. With time, thought, and imagination, you and your colleagues can create visitor experiences that are eye-opening, mind-opening, even heart-opening. Few museum-based activities are as labor-intensive, or as rewarding, as exhibit development. An effective exhibit nurtures a bond between the visitor and your institution, and has the potential to inspire a lifelong love of museums.

This technical leaflet is a call to reflection followed by action. Whether you work through this introduction to exhibit planning on your own or with a group of colleagues, these observations and experiments may inspire you to tackle your own "exhibit makeover."[1]

What are Exhibits for?

In answer to this fundamental question, Barry Lord identifies *meaning* and *authenticity* as key factors that make exhibits transformative for visitors. "The purpose of a museum exhibition," he writes, "is to transform some aspect of the visitor's interests, attitudes, or values affectively, due to the visitor's discovery of some level of meaning in the objects on display—a discovery that is stimulated and sustained by the visitor's confidence in the perceived authenticity of those objects."[2]

The late Freeman Tilden, who first applied the word "interpretive" to visitor experiences in parks and other informal educational settings, incorporates similar factors into his definition of interpretation, "an educational activity which aims to reveal meanings and relationships through the use of original objects, first hand experience, and by illustrative media, rather than simply to communicate factual information."[3]

Consider these perspectives in light of a critique overheard years ago at Chicago's Field Museum. Two middle school students were filling out a paper-and-pencil worksheet (required by their teacher) in an exhibit hall. One said to the other in disgust, "This is just like school!" Clearly, those boys had been hoping to experience something *different* from school. Museum visitors expect to find an informal learning environment, without entry requirements, assignments, tests, or grades. Visitors are free to explore and discover; John Falk and Lynn Dierking have aptly named this core quality of the museum experience "free-choice learning." With thoughtful planning, exhibits can give all visitors—including students—opportunities to choose their own pathways, focus on topics and activities that interest them, and express their own ideas and opinions.

Romance: the Key to Planning Rewarding Exhibit Experiences

On your own or with colleagues, take time to recall and reflect on a frustrating experience you have had in a museum. Contrast that memory with a rewarding experience as a visitor. Begin to build your own list of exhibit planning dos and don'ts, based on your analysis of those very different encounters.

In his essay "The Aims of Education," Alfred North Whitehead offers a useful touchstone for planning rewarding exhibit experiences. Whitehead made his mark as a mathematician and philosopher. Along the way, he wrote essays about how people learn. His concepts of Romance, Precision, and Generalization correspond to levels of interest and expertise among your visitors.[4]

Whitehead believed that no matter how old you are, in order to learn something new, you must first fall in love with the subject matter. Dinosaurs, princesses, a basketball team, horses, a series of historical novels, nature photography—most people can identify a turning point that opened a door to a new fascination. Whitehead calls this mind-opening experience the stage of *Romance*.

When you fall in love with a person, everything about him or her becomes interesting. You ask, "What is your favorite flavor of ice cream? Where were you living in the fourth grade? Do you like cats?" The same holds true when we fall in love with a subject. We are hungry for information. We effortlessly absorb and remember every fact, no matter how detailed. This is what Whitehead calls the stage of *Precision*. Most kids who love dinosaurs don't grow up to be paleontologists. But their love affair with fossils may teach them that they can master a body of knowledge,

Experiment #1

Exploration

Please follow these directions one step at a time, without reading ahead.

1. Stand by yourself near the front entrance to the exhibit gallery.
2. Relax. Spend one or two minutes clearing your mind and using all your senses to become as attentive as possible to your environment.
3. Let yourself be drawn in any direction toward any one of the exhibit spaces.
4. Explore the exhibits until you find an object that you really like. Move around and look at this object from different points of view.
5. Make a drawing of the object. _____ (Use blank side of this page.)
6. List any words that will help you describe the object to another person. _____
7. What are some questions you have about this object? List them. _____
8. How does this object make you feel? _____
9. How is it like you? _____
10. How is it different? _____

or convince them that even the biggest and strongest critters may turn out to be vulnerable. For Whitehead, this is the culminating stage of learning, *Generalization* of a set of principles to other areas of one's life.

Romance is the essential ingredient in exhibit planning. Most people come to the museum in search of romance. They hope they'll fall in love with something in the course of their visit. It's very frustrating to run up against a welter of facts (such as a display case full of old tools) or a generalization ("Pioneer Tools"). Whoever planned those exhibits was already in love with tools, but neglected to do the essential matchmaking that would enable others to discover the romance of tools. Without romance, precision is just wasted breath and generalization becomes "this is just a bunch of old stuff and has nothing to do with me."

This technical leaflet alternates between information-sharing and hands-on, minds-on activities. Some might call them exercises, but it's more fun to think of them as experiments in creative exhibit development. The first experiment, *Exploration*, will help you fall in love all over again with the objects in your institution. Viewing your own collection through this new lens of romance, you'll be better equipped to help visitors connect, relate, and want to know more.

Exhibit Planning Step by Step

Keeping in mind the overriding goal—to create entry points that allow your visitors to connect, relate, and fall in love—you are ready to dive into exhibit planning. First, become familiar with the elements that make up an exhibit plan. Then try an experiment in exhibit planning—on your own, or with your colleagues.

< Step 1 >

Mission statement, take-home messages, and storyline

Exhibit planning begins with your institutional ***mission statement***. The mission statement summarizes why your museum, historical society, archives, and/or site exists, and identifies the people you serve. It reflects your distinct identity and purpose. Write your mission statement on a whiteboard or large sheet of paper, and refer to it throughout exhibit planning. Your exhibits and programs should be consistent with your mission. Ideally, they advance and contribute to fulfillment of your mission.

The next step is to decide on the big ideas that you want all visitors to take home from their experience.

Take-home messages don't necessarily appear anywhere in the exhibit. They are the moral, the summing-up, and the memory that visitors take home and apply to their own lives. Take-home messages are specific. They are also noble and inspiring. Like your museum's mission statement, take-home messages will guide you throughout the exhibit development process.

Don't skip this step! If you don't choose your take-home messages, they will choose you. Exhibits without clear, intentional take-home messages run the risk of being confusing, frustrating, incomprehensible, or even insulting to visitors. Some might conclude, "This museum makes me feel stupid," or "History is boring," or "A five-year-old could make better art than this."

In a museum setting, take-home messages fall into three main categories:

1) *The story.* The Columbia River Bar is both a gateway and a barrier to the Pacific Northwest. Though jetties and dredging have stabilized the Bar, it can still be dangerous and even deadly. (Columbia River Maritime Museum)
2) *The museum.* The Museum at Warm Springs is about our values and traditions. (Confederated Tribes of Warm Springs)
3) *Myself, the visitor.* People like me are welcome at this museum. (Northwest Museum of Arts & Culture)

The storyline is the "so what" of your exhibit. The storyline expands on the take-home messages, encapsulating the core meaning of the exhibit in a succinct and compelling way. The storyline is the premise of the exhibit, and answers the question: "So what? Why go to all the time and trouble to create this experience for visitors?"

Some examples:

The Panhandle Plains Historical Museum in Canyon, Texas, tells a regional story. To outsiders, the Texas panhandle seems a desolate and inhospitable place. Yet people have lived there successfully for at least 12,000 years. How have they managed this? An exhibit titled *Experiments in Living* compared how people have addressed core life problems, from prehistory through the present day. (This approach was intended to challenge visitor assumptions about the superiority of contemporary panhandle cultures, by placing today's lifestyles on the same plane as earlier cultural experiments.)

Treasures from the Trunk: Quilts of the Oregon Trail, a 1993 temporary exhibit, brought ten heritage quilts to the Douglas County Museum in Roseburg, Oregon. Each quilt was made or owned by a woman who journeyed across the Oregon Trail in the mid-1800s. Quotes and historical evidence powerfully conveyed the message that none of these women had wanted to leave their homes and families. It was their husbands' idea to undertake the perilous journey across the Plains.

As you brainstorm ideas for your exhibit storyline,

think of kindling a romance between your visitors and the subject matter. Aim for juicy ideas, with built-in drama and human interest. Remember, you are not writing this sermon with the choir in mind. The idea is to tell your story in a way that will engage and motivate people who are new to your museum—including some who have never before set foot in any museum. The next two experiments are warm-ups to get your creative energies flowing.

< Step 2 >

Organize your storyline into "galleries of thought"

In a well-planned exhibit, visitors can follow the storyline as it unfolds in a series of "chapters." Exhibit designer Craig Kerger calls them "galleries of thought." Each chapter or gallery of thought presents an aspect of the subject matter you are interpreting. This arrangement helps visitors make sense of this unfamiliar material, as they view it from a variety of perspectives.

There's almost no limit to the number of ways you can organize an exhibit. The only limit is your creativity. To get you started, here are some types of organizing concepts that many exhibit planners have found useful:

Category: If you have a fine collection that relates to your storyline—military uniforms, obsolete business machines, tea-party china, branding irons, cameras—consider including multiple examples in your exhibit. But bear in mind that the fact that you find a category of objects fascinating doesn't mean those objects will automatically appeal to visitors. Think about how you first fell in love with branding irons, etc. Then figure out how to offer your visitors a similar opportunity.

An exhibit on African hats (*Crowning Achievements: African Arts of Dressing the Head*, High Museum of Art, 1997) displayed amazing hats from all over Africa in four-sided cases. For each hat, four illustrated labels explained who made the hat, how it was made, how it was used, and how it ended up in the museum's collection. Visitors read each label completely, and looked carefully and repeatedly at each hat. Whoever organized this exhibit understood that people are insatiably curious, and capable of learning just about anything!

Chronology: Does your storyline have a beginning, middle, and end? If so, you may decide to organize the content along a timeline. (Warning: some people demand a timeline because they feel lost without it. Others find that timelines make their eyes glaze over.) An alternative solution is to contrast "then and now." What was the floor plan of a typical family home in 1600 and today? When did men wear beards and when did they shave them off? How did people in North America cook their food in pre-contact Native cultures, in the pre-industrial era, in the nineteenth century, and before microwaves?

Analogy: To help visitors understand a complex process, use analogies to familiar processes. An exhibit on adaptation at the University of Oregon Museum of Natural & Cultural History invited visitors to

Experiment #2

Pocket Archaeology

Warm up the romance juices, and let your imagination roam, by brainstorming storylines for an imaginary exhibit. With a group of colleagues, choose a few everyday objects from your pockets, purses, and desktops. Put them all together on a tabletop. Work as a group or in pairs.

Imagine that you are archaeologists in the year 3000. These assembled objects are the findings of your latest dig. You have dated the site to about 2000, a little-known period in human history. You are planning a small exhibit to interpret this previously unknown culture to museum visitors. Using only these objects, brainstorm as many storylines as you can.

Allow 15 or 20 minutes. If you're working in pairs, share your storylines with the whole group. How many different approaches did you come up with? (Remember this time-honored principle of exhibit design: "There's more than one way to skin a cat.")

Experiment #3

Telling Meaningful Stories

Each person brings an object or image from home that is special to him or her. (Ask people not to share personal information about their special item until later on.) Arrange the objects and images on a table where everyone can study them. Use white gloves, or establish "no handling" rules.

As a team, focus on one object or photograph at a time. Everyone uses their observational and brainstorming skills to share viewpoints on the meaning of each item. What clues does each image offer about particular people and families, and the historic context of their lives? What can each object tell you about how, where, and when it might have been made? How does each object and image relate to regional, national, or global events and issues?

Following the general discussion of each item, invite the person who brought that object or image to share the inside story. What makes it special to the person who knows the most about it?

compare different types of bird beaks to tools such as pliers, a hammer, and tongs.

Observation/deduction: Visitors like to solve problems. Is there a special object in your collection that has a story behind it? Consider including that object in your exhibit, along with helpful hints (other objects, images, quotes, information) to help visitors discover what it all means.

An exhibit on Africa at the Field Museum of Natural History included a mysterious wood object the size of a bowling ball, with dozens of nails pounded into it. Through text and photos, visitors had the opportunity to learn that in this particular African culture, when two people had a dispute, they were brought together in front of the whole village to work it out. When they had come to agreement, each person pounded a nail into the piece of wood as a sign of his/her commitment. What an "a-ha" moment for visitors, to learn that such an apparently nondescript object could carry so much social meaning, and that a community could resolve conflict in such a creative way!

Comparison/contrast: An object that seems familiar to exhibit planners may be a mystery to many visitors. Children whose shoes come from the mall may not be aware that people can make shoes for themselves, by hand, from natural materials. A pair of flip-flops displayed next to woven sagebrush bark sandals can help visitors make the connection. How are they similar? How are they different?

Theme: A theme is a concept that shows up repeatedly throughout an exhibit. Deeply embedded in the subject matter, a theme expresses the essence of a person, group, or situation. For example, the Museum at Warm Springs celebrates the traditions and values of the Confederated Tribes of Warm Springs, Oregon. The importance of elders is a core value, represented by words and images of tribal elders throughout the exhibit gallery.

Watchword: English speakers say, "Two heads are better than one." Masai speakers say, "One head cannot hold all wisdom." In the United States people say, "It's raining cats and dogs." Greek speakers say, "It's raining tables and chairs." Look for proverbial expressions, song lyrics, jokes, rhymes, and other quotes that sum up familiar and unfamiliar ways of understanding the world. These intriguing sayings show why cultural diversity is essential. They add meat and zest to your storyline.

Experiment #4

Develop an Exhibit Plan

Develop an exhibit plan that includes:

- Take-home message(s)
- A storyline that delivers the take home messages
- One or more organizing concepts
- Must-display objects and images
- A couple of juicy facts

< Step 3 >

Inventory the content and pin down the most important facts

Which objects and images must be displayed?

Are there some hidden treasures in the storerooms, always shown during behind-the-scenes tours but not available to general visitors? Are some objects and photos so controversial that you're afraid to display them? Those may be the ones that will be most interesting to visitors. Do some objects and images lack information? Putting them on display and inviting visitors to share their ideas and opinions may help you decipher some mysteries!

Facts: invite visitors to observe and guess… then tell them something fascinating!

Either in label text or in the course of a docent tour, invite visitors to be "history detectives." Suppose a length of rope is a centerpiece object, dramatically displayed and lit. All the clues say this rope is important. Why? Ask visitors what they think the rope is made of. This could be a lift-board interactive; visitors might study the rope through a magnifying glass. Main point: it's made of a natural fiber; it's not made of nylon. This is a fact that visitors can *observe.* Then ask whether the rope was made before or after the 1950s. This question requires visitors to *guess*, based on observation.

Now they're ready for some juicy facts that awaken the "romance" of this object: this rope was used in a hanging in Lane County, Oregon in 1899; and this was the *first legal execution* in Lane County. At this point, visitors may be ready to move to the "precision" stage: interested, attentive, and hungry for information.

< Step 4 >

Find ways to motivate and engage your visitors

Multiple perspectives: People are insatiably curious about everything, especially important things—the whys and wherefores of history, natural history, art, and science. At the same time, each person brings a unique set of experiences and perspectives to your exhibit. How can you make the most of your visitors' curiosity and knowledge? One way is to let them know that their questions and knowledge are valued, accepted, and encouraged in your museum.

A single viewpoint—especially in relation to a controversial issue—will quickly be perceived as a party line. Offer multiple perspectives, inviting visitors to consider various viewpoints and come to their own conclusions. Use first person voices, in the form of quotes, eyewitness accounts, and oral histories, to illustrate multiple perspectives.

Who knows the stories? Open up the process. An exhibit about a particular group must be developed in consultation with members of that group. They know the juicy facts. They also know what stereotypes and misconceptions are out there that you should try to correct.

Interactives: Identify "bullet-proof" objects, or use replicas, to allow visitors to touch, explore, manipulate. Find opportunities to add sound and smell to the experience. Adapt simple games such as I Spy. Exhibit mystery objects and mystery photos and invite visitors to comment. Visit a nearby children's museum to get ideas; they'll be appreciated by visitors of all ages.

Invite visitors to contribute: Visitors can write, draw, or audio-record in response to changeable questions. A moving array of responses was posted when the Minnesota History Center asked, "What is a family to you?" Visitors can contribute photos of family members and friends who live in other countries, and loan treasured objects, with accompanying stories. They can give you feedback on current and proposed exhibits. Some may decide to join your museum, volunteer…even serve on the board! The key here is to think of exhibits as a way to *communicate* with your visitors.

< Step 5 >

Plan the "look and feel" of your exhibit

The following information and guidelines on exhibit design (Step 5 and Step 6) were written by Jeffrey Jane Flowers, and are excerpted and adapted from Parman and Flowers, *Exhibit Makeovers:*

A well-designed exhibit—whether large or small—has a distinct visual style that communicates key messages about the content to viewers from across the room. This is usually accomplished through the use of one or several design tricks that you can use in your display.

Scale: If you have many small or similarly sized objects to work with, consider enlarging one element to draw people in. This could be accomplished by photographing or scanning an object or image and enlarging it to use as a backdrop for a section of your display.

Color: Gather your objects on a table with a neutral (white or off-white) background. Cover a table with clean butcher paper, available at craft stores on rolls, or a simple white table cloth. Ideally, your table would be about the same size as your case. If not, consider approaching this exercise in sections. Study the colors of the objects and discuss what might be complementary or contrasting color options. Perhaps a darker or lighter neutral color is needed to allow the natural variety of colors and forms to be seen clearly. Or perhaps the color range is a little dull, so a bright or dramatic color is need to liven up the objects.

Craft and art supply stores sell sheets of drawing papers in 18" by 24" sheets in a large variety of colors—once you have some colors in mind, purchase a few of these to try out colors as part of your display in the backdrop, headlines, or text areas.

Active Dimensions: Often our first impulse is to think of our display cases as flat or one-dimensional spaces with elements arranged horizontally in line

Experiment #5

Expand Your Exhibit Plan

Add these components to your exhibit plan:

- Multiple perspectives on an aspect of your exhibit
- An interactive experience
- A way for visitors to contribute something to the exhibit

Experiment #6

Imagine Your Exhibit Plan

To imagine what your exhibit will look like and how visitors will experience the space, try some thought experiments. Imagine must-display objects and images as…

- Actors in a play. What kind of stage set will help visitors get into the mood and spirit of the story they will act out?
- Hosts of a party. What's the theme of this party? How will you furnish the room so that visitors will feel comfortable and at home? What would make the party fun for them?
- Part of a story that is set in a particular time and place. How can you use colors, textures, furniture, materials, graphic and typography styles, sound and light, and other elements to transport people to another era or a different part of the world?
- Reflections of human experience and emotion. How could exhibit elements express the essential emotions of your story, such as joy, fear, sadness, or courage? What props and décor could proclaim what this exhibit is all about—family, work, sport, overcoming challenges, or other dimensions of life?

with the edges of the display unit. This arrangement tends to lead to a static, or inactive, layout. In addition to scale and color, simply taking one element of your display, such as a headline or object, and "breaking out" of the flat, right-angled grid adds activity and interest to the case. For example, an object or text panel that is suspended away from the back panel of the case appears to step forward toward the visitor. Similarly, objects and/or text panels that overlap instantly add a sense of depth to the case. Objects can appear float in a case either by being suspended with monofilament line, being set out from a backdrop on wire. A flat object can be pushed out from the back of a case with layers of foam core cut somewhat smaller than the object's dimensions.

Dynamic Angles and Groupings: While you have your objects out on the table, take some time to explore some playful and unusual arrangements of the pieces. A good exercise would be to start with them in the most static, even arrangement you can think of—as if each one was in a little compartment by itself with no sense of organization other than being placed neatly on a set of evenly spaced shelves.

Now consider your organizing concepts. Which of these concepts can be represented by the placement of your objects on the table? Which makes the most sense with the story that you are telling? Some examples:

A time line: Where the objects tell the story in a chronological order.

Context: Some objects may belong together since they were all owned by the same family or were part of the same historical event.

Compare and contrast: A dozen examples of different objects that are related by function that are interesting to see side by side.

Which of these arrangements is the most visually pleasing, or tells the story best? Take digital images of groupings that you particularly like, so that you can easily re-create them in your final case.

This is also a good opportunity to think outside the case if there is a blank wall that adjoins your display area. You might add a headline, graphic panel, or model, or create an oversized cutout object that relates to your topic and grabs attention from across the room.

< *Step 6* >

Produce and install your exhibit

Create a blueprint: Take accurate measurements of your case and create a scale drawing of your space. If you are using a wall area near the case, be sure to include this area as well. Make this drawing as large as possible and practical for the team to share—you'll find it easier to visualize things when they are closer to the actual scale of your final display. Use paper cut outs, also to scale, to approximate objects, images, text panels, and groupings that will form the display. Work from measurements so that your shapes reflect the real dimensions of your elements. If you are using large sections of color, use colored paper to approximate these areas as well.

Arrange and rearrange these pieces until you feel that you have found a balance of objects, images, and text that tells your story, and shows off the objects and images well. If things seem too crowded, consider editing out part of the story. If things seem a little sparse, consider enlarging some of your images or creating a backdrop that complements the period or message of the display. When you find the perfect balance, tape your papers down, and use this as a master guide to prepare for your installation.

Assemble the pieces: Graphic panels and backgrounds are often the first sections of an exhibit installation. Keep graphics simple; use one font or typeface with a minimum of bold and italic variations. Avoid white type on a dark or black background; it's difficult to read. Mount your graphic panels on acid-free board and trim them neatly.

Some of your objects or images may need to be propped up or held in place to show well, or may need protection if a case can be bumped or shaken. Consider each object before you begin and consult with a curator or conservator in your region for ideas about archival-quality materials to hold these pieces in place. Various kinds of tape that you might use at home (including duct and scotch tape) are not compatible with museum displays.

Take time to think through and jot down a schedule with a list of installation tasks. Note which of the parts can be prepared in advance (text panels, mounting and framing), as well as what needs to be done on site (painting, hanging objects). Are there tasks that require two or more sets of hands to complete safely or special tools or hangers that you assume are in the toolbox?

If space and security allow, assemble all of your elements in a staging area a day or so before you install everything. Review the installation plans to be sure that there aren't any holes in your schedule, equipment, or materials. Installing a new exhibit is stressful enough without three trips to the hardware store!

Practice common sense installation. If this is your first installation, allow lots of extra time. Don't install the day before the opening—install three days before. Install when the museum is closed if possible. If not, block the space around the case so that visitors are not in the area. This will protect your objects from accidents and your visitors from tools, drop cloths and ladders.

Be thoughtful about lighting. Direct sun and bright incandescent lights can be harmful to many materials

and possibly the inks in your graphic panels. A lower level of fluorescent light or indirect, filtered natural light outside of a case will be much safer.

Wear gloves (white cotton) when handling delicate objects. This will also protect your display panels from fingerprints. Secure everything carefully. Don't worry if a pin or wire shows—it is more important that artifacts are safe from things that go bump in the night. Clean the inside of the case with non-toxic glass cleaner as you work through sections—it may be impossible to reach a section of glass after elements are arranged. Clean the outside of the case thoroughly once you are finished. Clean every day for dust and fingerprints once the exhibit is open.

Congratulations! You've completed this experiment in exhibit planning. For further guidance on exhibit planning, design, and installation, consult the reference list below; and ask advice from museum colleagues in your community and region.

By starting small (with a single case or two), you'll learn skills and methods that are applicable to an exhibit gallery, or even an entire museum. And remember: the most important goal of any exhibit makeover—single-case, gallery-level, or museum-wide—is to offer engaging and meaningful experiences to your visitors.

Alice Parman, Ph.D. is an interpretive planner based in Eugene, Oregon and is author of *Exhibit Makeovers: A Do-It-Yourself Workbook for Small Museums,* part of the AASLH at AltaMira Press (www.altamirapress.com). Contact Alice at alice@aparman.com or find other information and resources at www.aparman.com.

Useful References for Exhibit Planning

Kathleen McLean. *Planning for People in Museum Exhibitions.* Washington, D.C.: Association of Science-Technology Centers, 1993.

Alice Parman and Jeffrey Jane Flowers. *Exhibit Makeovers: A Do-It-Yourself Workbook for Small Museums.* Lanham, MD: AltaMira Press, 2008.

Beverly Serrell. *Exhibit Labels: An Interpretive Approach.* Walnut Creek, California: AltaMira Press, 1996.

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American Association for State and Local History. *Technical Leaflet Bundle 6: Exhibit Planning.* Nashville, Tennessee.

John H. Falk and Lynn D. Dierking. *Learning from Museums: Visitor Experiences and the Making of Meaning.* Walnut Creek, California: AltaMira Press, 2000.

Tammy S. Gordon. *Private History in Public: Exhibition and the Settings of Everyday Life.* Lanham, MD: AltaMira Press, 2010.

Footnotes

[1] Alice Parman and Jeffrey Jane Flowers, *Exhibit Makeovers: A Do-It-Yourself Workbook for Small Museums* (Lanham, MD: AltaMira Press, 2008).

[2] "The Purpose of Museum Exhibitions," Barry Lord and Gail Dexter Lord, *The Manual of Museum Exhibitions* (Walnut Creek, CA: AltaMira Press, 2002), 19.

[3] Freeman Tilden, *Interpreting Our Heritage,* (Chapel Hill, University of North Carolina Press, 1977, 8.

[4] Alfred North Whitehead, *The Aims of Education and Other Essays* (New York: Free Press, 1967).