

EXHIBIT LABELS

SECOND EDITION

An Interpretive Approach

BEVERLY SERRELL

Exhibit Labels

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An Interpretive Approach

Second Edition

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For Judy Rand and Katherine Whitney

Contents

Preface ix

Introduction 1

PART I: Overview

1 Behind It All: The Big Idea 7

2 What Are Interpretive Labels? 19

3 Types of Labels in Exhibitions 31

PART II: Considering the Audience

4 Who Is the Audience (and What Do They Want)? 49

5 Audience Fragmentation 69

6 Selecting the Right Reading Level 86

7 The Number of Words 97

8 Multilingual Labels 106

9 Writing Visitor-Friendly Labels 117

10 The Label's Voice: Who Is Talking to Me? 135

PART III: Enhancing the Visitor Experience

11 Hierarchies 147

12 Modalities 161

13 Making Words and Images Work Together 166
14 Labels That Ask Questions 178
15 Labels for Interactive Exhibits 190
16 Digital Interpretive Devices 204

PART IV: Tasks

17 Getting Started (and Getting It Done) 233
18 Evaluation During Development 244
19 Typographic Design 266
20 Production and Fabrication 287
21 Evaluation After Opening 302

PART V: Conclusions

22 Findings from Research and Evaluation 327
Bibliography 331
Figure Credits 343
Index 345

Preface

Welcome to the second edition of *Exhibit Labels*. If this is your first copy, I'm glad you're here. If you own the first edition, welcome back.

There were three remarkable bits of feedback that I got from the first edition: (1) people told me that they had to buy extra copies because they would lend the book and never get it back; (2) the publisher told me that it was the most-often-stolen museum book from the display at the annual convention hall booth; and (3) my colleagues complained that many of the photos in the book were illegible. I hope this edition is still true for numbers (1) and (2) and does a better job for (3).

The second edition was much harder to write than the first. With the first edition, the words and thoughts flowed out onto the blank pages. During the first three months of writing I was luxuriating as a Getty Scholar in Santa Monica with no other distractions than the great weather and the beach. This time I was struggling in my home office with other projects, a husband, and housework competing for my attention. Every step was a challenge, especially answering the many content questions on every page: Should this information stay in? Is it still applicable, even after nineteen years have passed? Who had done research that has helped validate or changed some of my ideas? Where is that article that states so clearly the theories I believe in? Who is going to be piqued with me for leaving out references to their work?

I had to get a lot of help. For help with the writing, editing, and overall organization of this book, the invaluable Katherine Whitney was there all the way. We've worked hard to bring in many new examples and voices while retaining the strengths of the older edition. We agreed that many concepts from the first edition about interpretive labels still held true:

- Labels are really important, even in this digital age.
- They can be done right, and it's worth it.
- It takes lots of time and hard work to get them right.
- Words work better with supporting visuals and vice versa.
- When labels are done right, people look at them and say, "Why would you have done it any other way?"
- Good labels cannot fix a poor exhibition, but they can help.
- Having a big idea makes everything go smoother.
- Evaluation is mandatory for interactive exhibit labels.
- Evaluation will be worth the time it takes whenever it's done.
- Exceptionally good exhibitions are the exception.

This edition retains many of the same principles, examples, references, and recommendations from the first edition. Just because they are old doesn't mean that they don't apply or are out of date. In fact, when the publishers approached me about doing an update, I didn't think it was necessary because I still believed almost all the advice I'd preached before. But I could see the rationale in the chance to bring in new research, photos, and references because the field has changed a lot in the last two decades.

Changes in the museum profession that have impacted the content and design of labels in exhibitions include the role of curators and the team approach in exhibition planning and design; the definitions and breadth of informal education and interpretive planning; the growth of visitor studies and research on learning in informal settings; and the increased use of all forms of evaluation.

Some of the new issues and challenges that we have to respond to include:

- Digital media is a huge moving target.
- Visitors expect exhibits to be interactive, and they want to participate socially.

- Museum professionals are using new terms and having discussions about experience design, information design, and intentional design.
- A wealth of new publications are available.

Photographs—twice as many as in the original edition—are new, and they show good examples of the principles set forth here. We've all known and seen enough bad examples, and good examples deserve praise.

This edition features all-new case studies, most of them written by other people. The chapter on "Digital Interpretive Devices" contains four case studies from the more experienced viewpoints of makers and users of them. It was great to have so many people willing to share their ideas and expertise; it was a new challenge to add other voices to the book.

I hope that this edition will be helpful to museum professionals and museum studies students, especially the young ones who are still forming their ideas about exhibitions and visitors, and to the crusty old silverbacks who, like me, are trying to remain nimble, or at least wise.

Heartfelt thanks to the many people who helped, in addition to the marvelous Katherine Whitney, all the other wonderful people: Hannah Jennings, for getting the photos ready; Ellen Bechtol for her focused attention on the last-minute minutia checking and bibliography formatting; reviews and edits by Sharon Kurth, Nancy Levner, Karen Furnweger, and Barbara Becker; excellent advice from Gretchen Jennings and the people at the Exploratorium—including but not limited to Eileen Campbell, Kevin Burn, Dianne Burke, Hugh McDonald, Pearl Tesler, Donna Linden, plus Josh Gutwill, Adam Klinger, and Veronica Garcia-Luis; all the people who searched for and loaned photographs; all the people who wrote case studies; my editor, Charles Harmon; Linda Kellen for the illustrations; and others who helped—Darcie Fohrman, Brianna Cutts, Gordon Chun, Jennifer Sparrow, Jennifer Hennessey, Kathy McLean, Peter Samis, Susan Spero, Wendy Meluch, Margie Maynard, Lisa Park-Steskal, Rachel Vourlas, Ken Hopkins, Tamara Biggs, Linda Wilson, Gene Dillenburg, Margie Prager, Carrie Gustavson, Kris Morrissey, Randi Korn, Jennifer Elliott, Mary Faria, Shawna Jones, Sean Duran, Amelia Estrich, Steve Bitgood, Sue Allen, and my husband, Jim Des Jardins, and last but certainly not least, the fabulous Judy Rand.

Introduction

Many common mistakes made in the writing and design of exhibit labels are avoidable, and there are many findings from visitor studies to guide the way.

The list of common sins committed by label writers and label designers is, unfortunately, not getting shorter.[1] Writers are doing a better job of being more visitor friendly and writing shorter and more active labels, but the typical errors that result from poor graphic design choices—reflections, shadows, type too small, type colors with not enough contrast to background, lack of paragraphs, unintelligible icons or color coding—are still too prevalent.

I've heard from dozens of label writers over the years about how this book has helped them write better labels. I have not heard from many designers. Here's hoping that the word will get out with this edition, which has been written with them in mind. The photographs were selected for being effective graphic examples, thanks to good writing and good design.

Suggestions for ways to avoid the sins are given throughout this book, but a brief summary of "commandments" will remind you up front of what to avoid. The first six will increase the benefits that visitors can get from paying attention to labels; the next four relate to decreasing the amount of effort that visitors have to make to read them.[2]

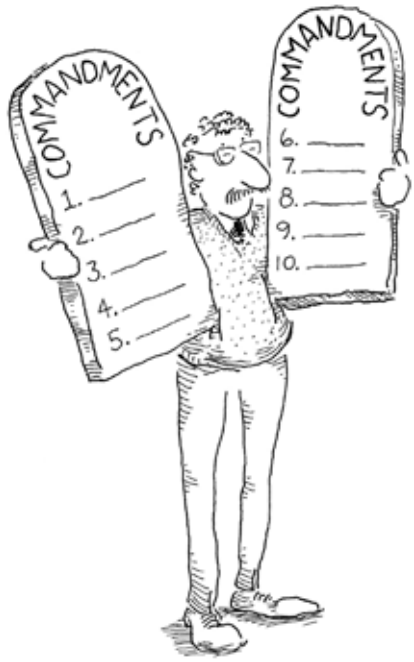


FIGURE I.1

TEN COMMANDMENTS

1. Labels should begin with concrete, visual references to the objects they interpret to bring them to life.
2. Labels should relate to the big idea of the exhibit, not ramble without focus or objectives or contain sub-sub-subtopics.
3. Labels should emphasize interpretation (offering provocation) over instruction (presenting information).
4. Labels should know their audience and address visitors' prior knowledge, interests, and/or misconceptions.
5. Labels that ask questions should be visitors' questions.
6. Label design should reflect the label's content or context and have a recognizable system of organization of label types.
7. Labels should be written with a vocabulary that is within reach of the majority of visitors.
8. Labels should be short and concise, more like a tweet than a tome.

9. Labels for interactives should have instructions or interpretations integrated in logical, intuitive ways.
10. The typography (typefaces, sizes, design, colors, lighting, materials, and placement) should make them legible and easy on the eyes, not busy or distracting.

Research and evaluation of labels in exhibitions tell us that these things will increase visitors' use of labels, encourage reading, and foster engagement, comprehension, and meaning making.

We label writers are really lucky people because we get to craft less text with more focus on real things in real spaces for visitors in meaningful places with shared boundaries, unlike the virtual, unbounded, unlimited Internet.

NOTES

1. Stephen Bitgood, "Deadly Sins Revisited: A Review of the Exhibit Label Literature," *Visitor Behavior* 4, no. 3 (Fall 1989).

2. Stephen Bitgood, *Attention and Value: Keys to Understanding Museum Visitors* (Walnut Creek, CA: Left Coast Press, 2013).

I

OVERVIEW

1

Behind It All

The Big Idea

A powerful exhibition idea will clarify, limit, and focus the nature and scope of an exhibition and provide a well-defined goal against which to rate its success.

When I put this chapter first in the 1996 edition, I wasn't sure it would be as important as it has turned out to be. Many cases since then have proved a big idea to be a useful tool for creating necessary guidelines for label writers. Writers can do their jobs better and the exhibition team can put together a more coherent exhibition when there is a big idea that sets the conceptual boundaries. It's about clarification and focus. Simplicity is not the goal.

WHAT IS A BIG IDEA?

A big idea is a sentence—a statement—of what the exhibition is about. It is one complete, noncompound, active sentence that identifies a subject, an action (the verb), and a consequence ("so what?"). It is one big idea, not four. It is the first thing the team, together, should write for an exhibition. A big idea is big because it has fundamental meaningfulness that is important to human nature. It is not trivial.

The definition of a big idea, written as a big idea statement, could read like this: *The big idea provides an unambiguous focus for the exhibit team throughout the exhibit development process by clearly stating in one noncompound sen-*



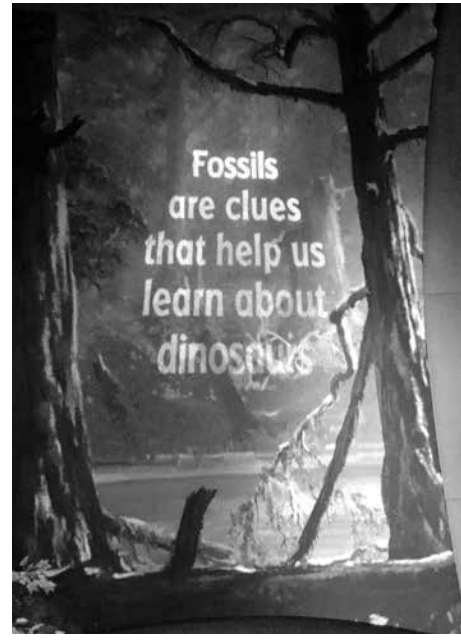


FIGURE 1.1
The entryway of the dinosaur exhibition at the Children's Museum of Indianapolis states the big idea clearly: It's all about the clues.

tence the scope and purpose of an exhibition. This one contains thirty words, but there's no word limit on a big idea. It should be as long as it needs to be.

WHAT DO THEY LOOK LIKE?

Examples of big ideas that contain a clear subject, an active verb, and a "so what?" follow. As you read each one, what picture do you get in your mind of what you will see, do, and find out about in an exhibition with this big idea?

- Most of what we know about the universe comes from messages we read in light.
- A healthy swamp—an example of a threatened ecosystem—provides many surprising benefits to humans.
- Forensic scientists look for evidence of crimes against wildlife in order to enforce wildlife laws.
- The conditions for life on Earth in extreme environments help define the ways we search for life on other planets.
- Art depicting the California gold rush promoted a skewed romanticized vision of one of the nineteenth century's most important events.

As you can see in the examples above, the subject can be stated in one word (*swamp*, *scientists*) with adjectives (*healthy*, *forensic*), or more than one word (*most of what we know about the universe*, *the conditions for life on Earth*, *art depicting the California gold rush*).

The next three examples do not conform to the Serrell rigors of a big idea statement (subject-verb-so what?), but they do function just like a big idea in that they define or describe the content of the exhibition. By reading the title or the statement, you know what the exhibition will be about.

- *Manufacturing a Miracle: Brooklyn and the Story of Penicillin*
- Sharks are not what you think.
- What is it about dogs that strongly connects them to humans?

All of the examples above show the difference between a topic and a big idea. Topics—such as sharks, penicillin, forensic scientists, or Western art—are incomplete thoughts, whereas a big idea tells you *what about* sharks, *what about* forensic scientists, or *what kinds* of art.



FIGURE 1.2
The final big idea of the *Evolution & Health* traveling exhibition from the New York Hall of Science stated a complex idea succinctly: "Every adaptation has consequences for our health." Photos and captions reinforce the exhibit's four themes.

Some people confuse topics, outputs, or objectives with big ideas. Topics and objectives will not help keep the exhibition focused.

These examples are *not* big ideas:

- This exhibit is about the settlement of the western United States.
- This exhibit will present the complex historical and scientific information surrounding the questionable authenticity of sculpture.
- Visitors will learn about molecular structure, chemical reactions, and the scientific process of analyzing unknown substances.
- Visitors will develop a sense of wonder about nature by exploring the secret world of animals.

The above are not big ideas because they don't say what the subject of the exhibition is or tell you what is going on. If "visitors" or "the exhibit" is the subject, you haven't got a big idea yet. If the visitors are doing something, it's probably an objective. If the exhibit is doing something, it's probably an output.

HOW DO YOU COME UP WITH A BIG IDEA?

It takes time. Hours, days, even months. It's not a matter of just wordsmithing. It takes a lot of thinking and rethinking. It is messy. There's lots of editing and reediting. Starting over. Sleeping on it. Often it means tabling it



FIGURE 1.3

It takes a lot of time, and it can be a messy-looking process, to develop a big idea. In the case of *Evolution & Health*, it took more than 50 hours of discussion and dozens of iterations.

until later. Sometimes you go through the whole development process without one. Sometimes you find it after opening.

Reaching the big idea by consensus is important because it needs to be "owned" by everyone on the team. If you decide on one by voting democratically, the losers will be resentful and "I told you so" will haunt the process. Consensus means that everyone shares the successes as well as the missed opportunities at the end.

HOW IS A BIG IDEA USED?

Having a big idea does not mean that the exhibition has to insist on communicating it overtly, but it provides a thread of meaning, coherence, and weight. Exhibit developers use the big idea to delineate what will and will not be included in the exhibit. It is primarily a tool for the team, not an actual label for visitors, so although it must be clear, it can use a complex vocabulary.

The big idea guides the development of exhibit elements and their labels (e.g., for cases, captions, interactives). This means that each element must have a clearly defined objective that supports, exemplifies, or illustrates aspects of the big idea. For each exhibit component, the question, "What's this got to do with the big idea?" should have a clear and positive answer.

Some exhibit developers do not exercise self-control when selecting content for an exhibition. They have no limits and do not resist the temptation to try to tell every story. As one developer admitted proudly, "I'm the one who was responsible for the 450 panels on the wall. I wouldn't give up." But what is most interesting to that expert will not interest, engage, or positively impress most visitors. Faced with those 450, a visitor reported, "My heart sank when I saw all those labels."[1]

Interpretive labels will be easier to write and will make more sense overall to visitors if the exhibition has a single focus that unifies all its parts. Good labels are guided by a strong, cohesive exhibit plan—a theme, story, or communication goal—that sets the tone and limits the content. Not just the labels, but all of the interpretive techniques and the elements designed for the exhibition will be driven by this plan.

Exhibitions with a big idea can be big or small (e.g., 8,000 or 500 square feet). Size is not the determining factor. A small exhibit with a big idea can be very powerful. A big exhibit with a big idea can be very comprehensive and contain many elements that reinforce each other.

ARE THERE ANY EXHIBITIONS THAT DON'T NEED A BIG IDEA?

Some very large, encyclopedic, nondidactic permanent collections may not lend themselves to having a big idea. But even for these, institutions may want to think about renovations and reinstallations that would break up their large mishmash galleries into smaller, more intellectually accessible units.

Not every exhibition at a children's museum needs to have a big idea, but the teams should be clear about the ones that do or don't. These decisions will be made by looking carefully at the age of the audience, the topic, and whether the exhibit experiences lend themselves to new learning—beyond active, engaging play.

WHAT HAPPENS WHEN THERE'S NOT A BIG IDEA?

Exhibitions that lack a big idea are very common. And they show it because they are overwhelming, confusing, intimidating, and too complex. There are too many labels, and the texts do not relate to the objects. The labels contain too many different ideas that do not clearly relate to each other. They are hard to grasp. They are typically underutilized—the majority of visitors move through them quickly, stopping at fewer than one-third of the elements.

Too often, museum practitioners, especially those working in children's museums and science museums, do not ask themselves what the big idea is. Instead, they develop the exhibition as a bunch of "neat, affordable devices that visitors will love and not be able to destroy." These neat exhibit elements are often developed with cleverness and creativity, but they lack a cohesive or logical relationship to each other and do not always support any exhibit objectives. They also lack soul—the fundamental meaningfulness that answers the question, "So what?"

Neat exhibit ideas without precision, focus, and soul are not enough. There should be more to exhibit elements than having visitors like them and enjoy themselves. Enjoyment is not the only criterion for success. Especially in exhibitions that claim to be educational, visitors should be able to understand what an element is about, grasp its context in the whole exhibition (i.e., within the big idea), and find it personally meaningful and useful.

Without a big idea, the job of the label writer is much more difficult: interpretive text contains fragmented, unrelated facts with emphasis on providing information for the sake of information, not on providing meaningful, useful experiences for the visitor's sake.

CASE STUDY

MY DOG

by Beverly Serrell

A natural history museum developed a six-thousand-square-foot exhibition about dogs. Early in the planning process exhibit developers came up with a big idea, stated as a question: "What is it about dogs that strongly connects them with humans?" The exhibits would answer the question in a variety of ways, such as dogs' physical and mental abilities, their social structure, and evolution and selective breeding.

Later in the process, experts in canine science from local universities were called in to advise on content for the dogs exhibition. They made many recommendations for different topics that the exhibits could cover—some that were related to the big idea, such as artificial and natural selection, canine communication, and a dog's sense of hearing, sight, and smell. But the experts also suggested other topics that were clearly not closely related to the big idea, such as research and conservation, the Genome Project, neoteny and juvenilization, endurance, canine familial disorders, the story of urban coyotes, and the story of Yellowstone wolves. The result was a very large exhibition.

Summative evaluation showed evidence that the primarily dog-loving audience was highly attracted to and engaged with half of the eighty-plus exhibit elements. But despite a preponderance of label text, a third of the visitors indicated a desire for more information. The evaluators concluded that the range of topics could have provided "additional layered information" to satisfy the needs of that audience. Really? Maybe not.

Maybe it's not just a matter of providing more information. Perhaps when visitors say they want more information (when in fact, a lot of information was provided at the eighty-plus exhibits), what they really mean is that they wanted more of *the right kind of information:* they hoped for more information about their own particular favorite species—my dog.

What if the exhibition had stuck to the original big idea in the first place and only included those topics that clearly answered the question about the unique aspects of our long-term relationship with dogs? What if the exhibit developers had been less comprehensive (for example, leaving out the parts about wolves and coyotes) and were more focused, saying more about the attractive qualities of dog behavior, their mental capacity, physical traits, and the history of our connection? Instead of being encyclopedic, the exhibits would allow visitors to compare their own dog's attributes with the ones presented, such as expressive ears and tails, emotional vocalizations, social structures, useful services, and sloppy wet kisses.

And people who did not own a dog could still become engaged with the traits they know and see in other people's pets.

Next time you see the plans for making the largest and most comprehensive traveling exhibition ever created to explore the history, biology, and evolution of dogs or horses or frogs or sharks or whatever, think: What about *my dog*?

That's the "so what?" of all big ideas—answering the question, "How is this going to relate to *me*?"

OTHER ADVANTAGES TO HAVING A BIG IDEA

Having a big idea does not make visitors' experiences in the exhibition more controlled or constricted, or less open-ended than an exhibition without one, but it does increase the likelihood that visitors will be able to decipher the exhibition's communication goals. A big idea keeps the exhibit team accountable to its educational objectives while allowing visitors to construct their own experiences freely.

The "voice" of an exhibition is linked to the big idea, but it is also different from it. The big idea determines what the voice or voices within the exhibit will be like—casual, formal, knowledgeable expert, firsthand experience, or different voices with different points of view.



FIGURE 1.4
How do you make plants dynamic—more than decoration or background? The Huntington Conservatory did it with a provocative big idea: "Plants are up to something."

If the big idea is a controversial one, a balanced viewpoint may or may not be desirable—again, it depends on exactly what the big idea is. The 1995 controversy at the Smithsonian Institution over plans for the *Enola Gay* exhibition was the result of a bad match between the subject (the atomic bombing of Japan in World War II) and the timing (the fifty-year celebration of the end of the war, honoring those who fought).[2] Was it supposed to be an academic history of a war exhibit or was it a tribute to the United States of America's armed forces? A balance between those two might not have been possible, but a clarification of whose point of view was being communicated and for what purpose would have clearly been a good idea.

Exhibit developers who work in teams will appreciate the power of a big idea. It can unify the efforts of the team members by helping to eliminate arguments over ego and turf. When all members of the team focus on the same objectives, each person's ideas can be considered more fairly. If an idea works,

the team embraces it; if it does not fit, the team can reject it without bias by one member. A clear big idea also protects the team from criticism by sources whose support is needed, such as the director or the board. In an exhibition driven by the team's desire to communicate a big idea, there will be less need for the single job of "educator" because the whole team will share that role.

A big idea works best when the team writes it down—but does not set it in stone—at the beginning of the exhibition development process, and changes it when necessary. The operative words are "written down." If the big idea is not written down, different people on the exhibit team will have their own interpretations for it, and conflicts will develop over what is necessary and appropriate in the exhibition. Even when the big idea is written, it is amazing how differently people will interpret it. Members of the exhibit team should all memorize or post the big idea label over their desks so that they can refer to it easily. "The big idea serves as the place to start, a place to come back to, and a place to end as the planning progresses or when the team gets off track. Repeatedly asking the questions what, how and why helps to define and refine what we want to say," said a museum studies student.



FIGURE 1.5
Consensus on a big idea is important; in the end, the whole team will share in credit for success as well as responsibility for the missed opportunities.

A BIG IDEA AND EVALUATION GO HAND IN HAND

A big idea can be tried out with visitors early in the planning stages, and visitor response can help developers shape or modify it, or tighten up the exhibit plan. After the exhibition is completed, evaluation can tell you whether or not visitors' experiences successfully reflect or incorporate the big idea.

As visitors exit an exhibition, if they can easily, unhesitatingly, and thoroughly answer the question, "What was that exhibition about?" and their answer resonates positively with the big idea, there is strong evidence for immediate impacts of comprehension and personal significance. If the majority of them seem hesitant ("Uh, ummm . . ."), uncertain ("I think, maybe, well . . ."), brief and incomplete ("It was about sharks"), or apologetic ("I really wasn't paying attention," "I just breezed through"), there is evidence that the big idea was not clear.

Summative evaluation can answer the question, "To what degree and in what ways did visitors understand what the exhibition was about?" Visitors certainly can create their own meanings in ways unintended by the exhibit developers, but this is not a problem as long as the majority of them create something that is not contradictory to the exhibit's purpose or does not perpetuate misunderstandings that the exhibit was supposed to correct.

I have again given a lot of space to the idea of having a clear big idea in the first place because so many other things depend on it—content research, label writing, image selection, design, layout, graphic look and feel, size, evaluation metrics. With a concise thesis statement as the basis for all interpretation, the use of words in the exhibition will have clear direction and defined limits.

In the next chapter, you will see that just as a big idea provides useful limits to the nature and scope of an exhibition, an interpretive approach to label writing gives the exhibition a less dogmatic, or knowledge-based voice. A big idea defines what the story will be, and an interpretive approach encourages visitors to become part of the story themselves.

NOTES

1. These comments were from "Critiquing Museum Exhibitions: The Sequel" (panel presentation, American Association of Museums annual meeting, 1995).

2. Mike Wallace, "The Battle of the Enola Gay," *Museum News* 74, no. 4 (July/August 1995).

2

What Are Interpretive Labels?

Interpretive labels tell stories; they are narratives, not lists of facts. Any label that serves to explain, guide, question, inform, or provoke—in a way that invites participation by the reader—is interpretive.

The purpose of interpretive labels is to contribute to the overall visitor experience in a positive, enlightening, provocative, and meaningful way. Interpretive labels address visitors' unspoken concerns: What's in it for me? Why should I care? How will knowing this improve my life? If labels only identify objects, animals, or artwork, they are not interpretive. As one visitor commented about the lack of interpretive labels in a natural history museum's bird halls, "Maybe one out of five birds had a little baseball card thing on them besides the name. 'Hits right, throws left, batted .328.' I guess I was looking for more."[1]

Interpretive labels are part of interpretive exhibitions, which are displays that intend to tell stories, contrast points of view, present challenging issues, or strive to change people's attitudes. Interpretive exhibitions are found in all types of museums where the design of the show is intended to give visitors the opportunity to become engaged in the exhibit environment, be aware of the communication objectives intended by the exhibit developers, and find personally meaningful connections with the exhibits.



FIGURE 2.1
Many books' worth of ideas were distilled on this wall to summarize the long, complex story of the development of Darwin's theory of natural selection at the Huntington Library. Just below are 250 editions of *On the Origin of Species* in different languages.

SOME BACKGROUND ON THE HISTORY OF INTERPRETATION

But what is "interpretation" itself? It is more than presenting information and more than encouraging participation. It comes to museums (in the United States) from the more oral tradition of educational programming in the National Park Service, and it is far more interactive than traditional, formal educational models of teachers as deliverers and mediators of information.

In the classic *Interpreting Our Heritage*, Freeman Tilden explained his six principles for interpretation, developed from his extensive experience in National Park ranger programs and in writing labels and designing exhibitions at park visitor centers.[2] Although his 1950s language is noninclusive (e.g., visitors and interpreters are referred to as "he" and "him") and the photographs appear dated, his principles still ring strong and true and are presented in a straightforward, down-to-earth style. Tilden's six principles:

1. Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.
2. Information, as such, is not interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information.
3. Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical, or architectural. Any art is in some degree teachable.
4. The chief aim of interpretation is not instruction, but provocation.
5. Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phase.
6. Interpretation addressed to children (say, up to the age of twelve) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program.

Tilden proposed his principles in 1957, long before museum educators and other practitioners began using words like *the visitor experience*, *meaning making*, and *empowerment*. His fifth principle is the most relevant to chapter 1 in this book: to have a big idea behind it all; to keep everything else focused toward one, overall whole message; and to think about visitors as whole people with many shared needs. I like his ideas about revelation and provocation being the goal instead of instruction.

There are other books that discuss the importance of and describe the history of interpretive exhibits. Two standard references within the environmental interpretation field are Sam H. Ham's recently revised and retitled *Interpretation: Making a Difference on Purpose*, and *Interpretive Master Planning* by John Veverka. In a newer book, *Interpretive Planning for Museums: Integrating Visitor Perspectives in Decision Making*, Wells, Butler, and Koke situate the role of interpretive labels into a broader consideration of interpretive planning for exhibitions or for an interpretive master plan at the institution level. Their whole book places emphasis on how museum practitioners can integrate visitor perspectives into their plans for developing and evaluating interpretive efforts.[3]



FIGURE 2.2
At the Museum of History and Industry in Seattle, a label invites you to use your imagination and be part of the story.

LABELS AS STORYTELLING

The above general notions about interpretation have concrete implications that are important for museum labels. For one, there are some interesting similarities among interpretation, narratives, storytelling, and exhibit texts. Printed words exist as visual and verbal elements to the reader's eye and mind, and as oral components to the reader's ear (reading silently or hearing

someone read aloud). Good interpretation, like good storytelling, carries the listener along with the sound of the words and the images they create, and lets the listener participate by anticipating where the story is going. Good stories don't keep the reader in the dark. Our brains are wired for emotional storytelling strategies, says Lisa Cron. "All story is emotion based—if we're not feeling, we're not reading."[4]

Museum exhibit labels tell very short stories. In figure 2.3, a label for a Greek vase not only describes what the man is doing but also how he ended up like this.



Wine Jug with a Drunk Man Singing



Greek, made in Athens, about 470 B.C.

Terracotta

Red-figured *chous* attributed to the Oionokles Painter

With his mouth open in song and his arms outstretched, the man depicted on this pitcher shows the effects of a night of drinking. His young servant is ready to minister to his needs, holding the man's belongings as well as the jug into which he urinates.

FIGURE 2.3
The Getty label tells a story with a punchy ending. Visitors look back and forth between the label and the image repeatedly, which is evidence of active engagement.

Below are three more examples of interpretive labels that strike a good balance between what the reader might anticipate is coming next and what does:

> When the tide ebbs, sandpipers fan out across mudflats and beaches to feed. As the tide rises, they retreat, to preen themselves and wait for the next low tide.
>
> —from an aquarium, at a seabird exhibit

> These screens were made at the Savonnerie manufactory, which was owned by the French Crown and provided carpets and screens for the royal chateaux. Such screens were known as *paravents* ("against the wind") and were usually kept folded in the corners of rooms. When the rooms were being used, the screens would be arranged by servants for protection against drafts.
>
> —from a decorative arts exhibit, as a caption for a pair of textile screens

> The logger needed clothes that were functional and provided freedom of movement. Pants were cut off just below the boot tops to keep the rain out and to prevent snagging. Men working in the woods often had to take off at top speed, and if a pant leg caught it could mean the difference between life and death.
>
> —from a history museum,
> as a photo caption in an exhibition about logging

These kinds of labels help readers look back and forth between the label and the object, following the details of the narrative. Or readers can imagine action in their minds and memories, aided by the label's concrete references. You may not see the tide rising, or feel the cold breeze in the chateaux, or witness the logger running for his life, but these quick stories give visitors a "minds-on" moment.

LABELS WITH MEANINGFUL STORIES

Visitors refer to labels in various ways: as blurbs, captions, wall texts, descriptions, titles, legends, cards, and explanations.[5] What changes would it take to get them to call labels *stories* or *conversations*? One way might be to follow the advice of Joseph M. Williams, in his very handy book called *Style: Ten Lessons in Clarity and Grace*.[6] He gives us some excellent guidelines for how to



FIGURE 2.4
A good label fires the imagination.

make prose more clear, less passive, and more engaging. His "First Principle of Clear Writing" states, "When we link the simple point that sentences are stories about characters who act to the way we use the grammar of a sentence to describe those characters and their actions, we get a principle of style more powerful than any other." His principle has two parts:

1. In the subjects of your sentences, name your cast of characters.
2. In the verbs of your sentences, name the crucial actions in which you involve those characters.

Similarly, labels that lack subjects and have unclear action cannot tell clear stories that flow easily.

Because many of the stories in museums are about people, labels can be edited to include them as the subjects. In the two examples below, notice how changing the subject of the label from objects to people creates a more engaging story.

CASE STUDY

A DESERT GRAVE WAYSIDE

by Beverly Serrell

While driving through the vast and scenic Big Bend National Park in Texas, along the lonely two-lane road, I encountered occasional pull-off areas with wayside exhibits—a single panel with graphics and some interpretation of the spot or view.

"A Desert Grave" was located at the end of a short trail from the parking area. It was a quiet, sunny day, with only a slight breeze. I read the story about the pioneers and how the wife had died and was buried here. I looked around and pondered the stark beauty of the desert and what it might have been like to live out here, and I thought about the struggles the family went through.

Years later, on another visit to Big Bend, I drove past the same place, and I stopped again to visit the desert gravesite. I walked down the path and came up to the wayside panel. I was stunned by how few words there were in the text—not more than one hundred. I thought there had been many more than that! My imagination must have filled in details about the weather, the scenery, the daily life, the sadness, and a wordless number of feelings that the text in "A Desert Grave" inspired in my mind after I'd first read it.

How often do just a few words create a lasting memory that felt like a fully lived experience? Let your labels be jumping-off places for people's imaginations. Let them fill in many more words and feelings.

Pictograph
Carvings and paintings on rock are scattered throughout California. They seem to have had magical or religious significance related to the hunting of large game. Other rock paintings were made during girls' coming-of-age ceremonies and boys' initiation rites.

Rock Carvings and Paintings—Pictographs
Early people carved and painted on rocks throughout California. The pictograms they created, such as the one on your left, may signify magical or religious aspects of the large game they hunted. Other rock paintings showed girls' coming-of-age ceremonies and boys' initiation rites.

In the first, the subject "they" refers to the pictographs, not the early people, and pictographs are never defined. The pictographs do not have beliefs, people do, and the second example more actively acknowledges that.

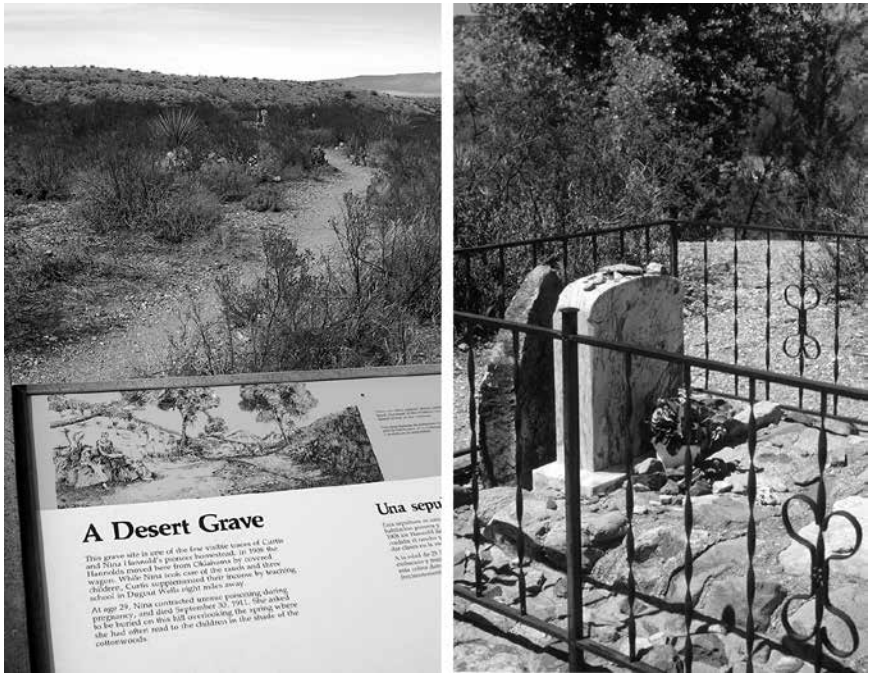


FIGURE 2.5
At a wayside exhibit in Big Bend National Park, a well-crafted story told in fewer than 100 words provokes a multitude of thoughts.

The nature of storytelling in museum exhibitions and the techniques for doing it well are part of a larger context of issues that surround education, communication, and being human. We need stories that tell of origins, envision the future, and give a sense of continuity and purpose. This is especially challenging when we think about the diversity of typical urban communities that museums serve. Because exhibitions can provide multiple types of experiences for visitors, museums are in a unique position to take on difficult topics.[7]

DIFFICULT STORIES WELL TOLD

The traveling exhibition *Race: Are We So Different?* asked "What is race?" and opened a public discourse on this difficult topic. One of the primary messages was that the concept of race is a human invention and that we are all more alike than different. Individual exhibits encouraged interaction and conversation, and "provided visitors with the information, evidence, and thinking tools necessary to make the leap from vague, confused beliefs about race to more sophisticated understandings of race."[8] Talking circles, mediated by trained docents, gave visitors the opportunity to discuss issues of race raised by the exhibition and their own personal experiences.

An exhibition about the Japanese internment camp at Heart Mountain in Wyoming walked a line between revealing what actually happened there and being sensitive to the people who were involved. The exhibition took a clear position: that the internment was illegal and wrong. The labels were written in the first person, and sometimes in the voice of a real person who had lived there. Oral histories and interviews with detainees prompted visitors to put themselves in the shoes of internees or provoked thoughts about modern civil rights issues.

Darkened Waters: Profile of an Oil Spill was about the grounding of the *Exxon Valdez* off the Alaska coast and its aftermath. Like the Heart Mountain exhibition, *Darkened Waters* had a point of view: The oil spill was a huge disaster. But it included different points of view—commercial fishermen, oil industry workers, government officials, conservationists, Alaska Native people, and others caught up in the spill—letting people, speak for themselves wherever possible. It did not, however, try to be equal or balanced. Instead, the "potential cacophony of voices [were] made coherent under that broad umbrella of the museum's clearly stated position."[9] Exhibit elements about

the transport and use of petroleum, marine life, and long-term energy needs encouraged visitors to think about the future and to take action.

The answer to the question, "What should label writers write about?" is a complicated one. The general answer is, write about something that will be meaningful and useful to visitors, and write interpretively. Other than that, it depends on the individual museum and its visitors, and the individual exhibition and its big idea.

The question should be reframed as, "How do you decide what to write about?" The discussions in this chapter, the previous chapter about the big idea, and the upcoming chapter about audiences guide you toward an answer for what the "what" is. The remaining chapters will help you decide the "how."

NOTES

1. From focus group comment in unpublished study by Serrell & Associates, "From Stuffed Birds on Sticks to Vivid Feathers, Gleaming Talons and Sparkling Beaks: A Summative Evaluation of the Bird Halls at Field Museum of Natural History" (unpublished report, Serrell & Associates, November 1992).

2. Freeman Tilden, *Interpreting Our Heritage*, 3rd ed. (Chapel Hill, NC: University of North Carolina Press, 1977).

3. Sam H. Ham, *Interpretation: Making a Difference on Purpose* (Golden, CO: Fulcrum Publishing, 2013); John Veverka, *Interpretive Master Planning* (Cambridge, MA: MuseumsEtc., 2011); Marcella Wells, Barbara H. Butler, and Judith Koke, *Interpretive Planning for Museums: Integrating Visitor Perspectives in Decision Making* (Walnut Creek, CA: Left Coast Press, 2013).

4. Lisa Cron, *Wired for Story: The Writer's Guide to Using Brain Science to Hook Readers from the Very First Sentence* (Berkeley, CA: Ten Speed Press, 2012).

5. Lisa Hubbell Mackinney, "What Visitors Want to Know: The Use of Front-End and Formative Evaluation in Determining Label Content in an Art Museum" (master's thesis, John F. Kennedy University, 1993).

6. Joseph M. Williams, *Style: Ten Lessons in Clarity and Grace*, 3rd ed. (New York: Harper Collins Publishers, 1989).

7. Neil Postman, *The End of Education: Redefining the Value of School* (New York: Alfred A. Knopf, Borzoi Books, 1995).

8. Randi Korn & Associates, Inc., "Summative Evaluation: *Race: Are We So Different?*" (unpublished report, Randi Korn & Associates, Inc., November 2007), xiii.

9. Kathleen McLean and Catherine McEver, ed., *Are We There Yet? Conversations about Best Practices in Science Exhibition Development* (Walnut Creek, CA: Left Coast Press, 2004), 63.

3

Types of Labels in Exhibitions

Every label in an exhibition has a specific purpose that needs to make sense within the organization of the whole, but given the way visitors encounter them out of order, they also need to function independently.

There is no universal terminology in museums to identify types of labels. Some institutions use function (e.g., orientation, introductory, caption); others use placement (e.g., wall text, case label, free-standing); some have in-house colloquial expressions (chat panels, tombstone labels); and others haven't thought about labels enough to develop an in-house style vocabulary or standards. Regardless of the names they are given, labels should be developed as an integrated system, from the single title, to the broadest categories, to the one-of-a-kinds. They should all work together.

The most important types of interpretive labels in any exhibition are the title, introduction, section labels, group labels, and captions. These labels help to organize the information and present the exhibition's rationale for looking like it does. Although these labels are developed as linear and hierarchical information, they may not be used in the "right" order by visitors. Nevertheless, the labels still should have internal integrity, organization, and a clear logic to the design.

Noninterpretive labels include identification labels (ID labels), donor plaques, wayfinding and regulatory signs, and credit panels. They will be discussed briefly at the end of this chapter. Labels for interactive exhibits, which

have special requirements, will be addressed in chapter 15. Here we offer a general classification of basic interpretive labels, and expand on the special role of captions.

TYPES OF INTERPRETIVE LABELS

Title labels identify the name of the exhibition. The best titles will arouse interest and curiosity and give enough information to enable visitors to decide whether they are interested enough in the subject matter to enter.

Large title labels placed high overhead (i.e., more than eight feet from the ground) may be missed by visitors and will need to be repeated somewhere in their line of sight.

There should only be one title, and it should be used consistently throughout the museum—the same name on the floor plan, in the guidebook, on the exhibit itself, and in the press release.

Introductory or orientation labels set up the organization and tone of the exhibition. A large, simple floor plan and a summary statement will help to



FIGURE 3.1
The Huntington Library welcomes visitors with a simple and beautiful title panel that includes the exhibition's four sections.



FIGURE 3.2
The exhibit title on the glass door at the Asian Art Museum helps orient visitors by letting them know there are four galleries and that it's okay to take photos.

prepare visitors for the size, sections, and themes of the space, even if it is a small exhibition, and especially if it is large.

Quick, clear orientation is a very important feature for visitors, but many people will not stop to read a long introduction because they are being drawn into the exhibit by many competing and enticing sights, objects, and sounds. If the entryway is crowded, visitors will not want to stop and block traffic flow into the exhibition.

Dense introductory text with many thoughts all crammed into one paragraph is not inviting or easy to read. For all these reasons, keep orientation information short and the print large so that visitors can glance-and-get-it without stopping.

Even though visitors are more likely to read gallery introductions in art museums, especially in special or temporary exhibitions, after the Detroit Institute of Arts' renovations and reinstallation of their permanent collection, they found that less than one in ten visitors read a section or gallery panel.



FIGURE 3.3
This section label at the Detroit Institute of Arts is broken into three paragraphs of about 50 words each, with plenty of line spacing. Introductory and section labels need to be easy to read from a distance.

Recommendations from their summative evaluation included this: Decrease the word limit for introductory panels from 150 to 50, and increase the size of the type to allow reading from a distance and at a glance.[1] Visitor research studies have shown that visitors who understand the organization of the exhibition and use it in the intended sequence (if there is one) spend more time and get more out of it.[2]

The prominence and importance of an introductory label may make it difficult to get the exhibit team to agree on it. As one label writer put it, "I can write three dozen captions and nobody will take any interest in them. But as soon as I write the introductory label, everybody from the director to the janitor wants to fiddle with the wording."

Section labels introduce themes or areas within an exhibition. These important clues to the arrangement of the content are often missed or skipped

by visitors if they only contain words, because visitors' attention is being drawn to the objects instead. Adding visuals and even mounting objects to section panels can create more interest in them. Placing them in the line of sight and keeping them short help, too.

In the exhibition *Darkened Waters: Profile of an Oil Spill*, many of the section labels were very brief, and the content was almost the same as the communication goals for those sections. This unity of concept and design provided a very clear and strong continuity of messages. For example:

Section Labels	*Communication Goals*
Recipe for a Disaster	There were multiple reasons for it
We Couldn't Clean It Up	We couldn't clean it all up
Oil and Animals Don't Mix	It was a huge disaster

Group labels inform visitors of the rationale behind a smaller subgrouping of objects, paintings, or animals. "Why are these things shown together?" is a common question in the backs of visitors' minds, and it needs to be answered to help visitors feel comfortable, competent, and in control of their own experience. Even if there is little cohesiveness in the groupings, inform visitors of that, so they will not wonder if they are missing something. Do not make area or group labels so long (that is, wordy) that people will want to skip them.

Group labels are also called "focus labels" and "chat panels" because they often contain more content than a title or subtitle and are more general than captions.

Captions are specific labels for specific objects (e.g., artifacts, photos, and phenomena), and they are commonly used in all types of museum exhibitions. Captions are the "frontline" form of interpretive labels because many visitors wander around in exhibits without attending to the linear or hierarchical organization of information (title, introduction, section label) until they see something interesting. If visitors stop only when something catches their attention, the information in caption labels must make sense independently—as well as work harmoniously with all the other labels.

Sometimes the only labels visitors will read are captions, because captions are usually short and placed right next to an object. They should refer to the visible specifics—beyond just the obvious—of the objects they discuss. If they are abstract or can be read alone without any reference to the object, they



FIGURE 3.4
When it's not possible to have labels with the objects, numbers key them to their identification information. A three-part label organizes captions for a group of jade pendants, enticing visitors to look more closely.

are not doing their job. Labels that support the caption information, such as subgroup or area labels, should be close by, so that visitors can start with the specific caption or ID, then jump to the broader context, and vice versa.

GUIDELINES FOR CAPTIONS

Below are some specific guidelines that will help make museum captions work effectively. Many of them are discussed at greater length in other chapters as well:

- Start with visual, concrete information—what visitors can see. Work from the specific to the general, not the other way around.
- Make the vocabulary appropriate for a broad range of ages. (Chapter 6 on reading levels will explain how.)
- Do not cram several ideas into one paragraph. Divide up the sentences into logical chunks.
- Keep the paragraphs short.
- Use bullets to make lists easier to read.

- Do not try to make generalizations in captions based on a single object or example. Keep information specific to what visitors are experiencing firsthand.
- Vary the length (number of words), depending on the intrinsic value of the object being captioned. Objects likely to be of more interest (e.g., biggest, most famous) to the majority of the visitors or that support the big idea best deserve longer captions. Do not make labels all the same length.
- Make captions short enough so that most visitors, if they choose to read, will be able to read the whole label. Five words per second is an average museum reading speed. Write most of the labels so that they can be read quickly—ten seconds or less, or about fifty words or less.
- Make caption type large enough for readers' range of visual acuity. Your audience includes senior citizens and children, regardless of the type of institution. A minimum of 20-point type is strongly recommended.
- Position captions so they are visible and legible to people in wheelchairs.
- Position captions so they are well lighted and shadows don't fall on them.
- If an object has been removed and the caption is still there, it is a thoughtful gesture to put up a photograph of the piece that is missing. It would add interpretation to also say why; for example, for loan or conservation purposes.

The following is an example of a caption that contains several of the above-mentioned characteristics, from an art exhibition about symbolism:

> Rain Mask with Reptiles, Figures, and Bats
>
> This powerful object was actually a mask used in a rain-petitioning dance at the Santa Anita settlement in the state of Guerrero, Mexico. It includes several symbols for water and rain:
>
> - blue eyes, the color of water
> - twisting, flowing serpents
> - a vampire bat's head at the top of the mask, included because bats live in caves, believed to be the home of the rain gods
>
> Another meaning of the mask relates to the notion of transformation and power. Lizards (as halfsnake, half-legged animals) were said to be able to whisper secrets to the wearer. By wearing the mask, an individual was transformed into a godlike being with both animal attributes and the power to commune with and control nature.



FIGURE 3.5
Extended interpretive labels placed at a distance from a large artwork can hold more chunks of text. Visitors at the Detroit Institute of Arts can read and look without doing the dance of squint, back up, squint, back up.

This "Rain Mask" caption contains numerous references to concrete, visual aspects of the object, and encourages visitors to look for details and think about how it might feel to wear the mask. The final paragraph of "Rain Mask" has fifty-six words. Does it look too long to you? At least it is telling a story, not just a list of unrelated facts.

Captions for interactive exhibits follow the same guidelines as above, but the placement and ordering of information are even more important. Text that deals with interpretation should have a different design—be in a different font, size, or color—than words that give directions. And directions need to be placed where people's hands and eyes naturally go. (See chapter 15 for more about labels for interactive exhibits.)

Outdoor wayside panels are captions; they caption the landscape. They usually don't have a lot of competition, being few and far between along a trail or a road or over a vista. But they have to provide context, since there



FIGURE 3.6
Visitors to a trail in Nevada's Great Basin can carry caption labels with them on paper or on their smartphones.

are usually no supporting labels nearby. The same rules for captions apply here. Waysides should address what visitors can see, directing attention to a physical characteristic or a place. Although the need to provide context might make them longer than typical caption labels, the text should be chunked out into easily readable bits and contain supporting visuals.

NONINTERPRETIVE TYPES OF LABELS

Identification labels contain minimal short details, such as name, maker, date, material, scientific name, and accession number. They are not interpretive, although they are often combined with interpretation or captions.

Several formats for ID labels are commonly used. The examples below show different arrangements of information and typography:

The Abduction of the Sabine Women
Painted in Naples, about 1640
Johann Heinrich Schonfeld
Oil on canvas

PIER FRANCESCO
Italian, 1612–1666
Vision of Saint Bruno 1660–1666
Oil on canvas 89.PA.4

PORCELLANIDAE
Petrolisthes maculatus
Anemone Porcelain Crab

DROMEDARY CAMEL
Camelus dromedarius
NORTH AFRICA AND ARABIA
Donated by Hall Foundation

In most cases, what is most important to visitors is what it is—its title and its common name, identifiers that they can relate to. The first sample shows the most sensitivity to the visitors' interests, vocabulary, and priorities. In the second, an unfamiliar artist's name and three sets of numbers present a jumble of details for visitors to sort through. In the third sample, few visitors would even know that the first line was the animal's taxonomic family name and the second its scientific Latin binomial; the typography and order are in the wrong priority for most visitors. The fourth is functional but somewhat boring.

Identification labels, as long as they are legible, are usually easy for visitors to decode, once a person has seen one or two. While consistency of ID information formats is important within each exhibition, format can vary between exhibitions. Different types of objects, artifacts, or animals might suggest or require a different ordering of information.

Donor information is typically provided last and in the smallest type. These taglines ("donated by . . ." "gift of . . . ") are not interpretive, and they should not be larger than or mixed in with captions, IDs, or other interpretive labels. Labels that acknowledge funders are best dealt with in their own space, near the end of the exhibition, in a discrete, respectful way. Materials,

typefaces, and sizes should be sophisticated but not out of character with the rest of the signage. Expensive bronze donor or funder plaques next to dog-eared, paper interpretive labels indicate that visitors' interests are not being considered first. Donor and funder names mixed into titles are ostentatious and confusing, such as "The Webber Hall of Mammals." Exhibit designer Paul Orselli has collected examples of creative donor recognition installations in his blog post "Many Ways to Say Thanks."[3]

Credit panels recognize the contributions and efforts of all the people who worked on the exhibition. A credit panel does not have to be in bronze, nor does it have to be big, but somewhere, credit should be given. Visitors should see the many people and different skills it takes to make a good show. Credit panels are also good for staff morale, as well as for reference and accountability.

Wayfinding and orientation signs help visitors find their way around the museum and orient themselves in each new space (such as when they walk in the front door or get off the elevator at an upper floor). These signs are technically not interpretive labels, but the role that orientation and wayfinding signs



FIGURE 3.7
The orientation map at Brookfield Zoo lets you know the flow of the indoor trail, the big idea, some of the critters you'll see, and how long it will take.



FIGURE 3.8
Floor plans are important not just for wayfinding in large, complex spaces, such as the Museum of Science and Industry in Chicago. They also provide an overview of the exhibition, name the themes, and designate the boundaries.

play in satisfying visitors' need to know where they are—and the importance that need has in making people ready and receptive for learning—should not be overlooked or underestimated. Visitors cannot be ready to receive interpretation if they feel lost. A secure and comfortable knowledge of present location—and the subsequent relative locations of exits, bathrooms, or food—are basic to allowing visitors to feel readiness for higher-level human needs that deal with social, creative, or intellectual aspects.

Regulatory signs tell us not to touch the art or not to feed the animals. With a little creativity, prohibitive signs can be made friendly, funny, and positive, not threatening.

DIFFERENT TYPES OF LABELS IN ONE EXHIBITION

The number of different types of labels used in any one exhibition will be driven by communication goals, size, budget, and other factors, but it is prob-

ably a good idea to limit the types of interpretive labels to fewer than ten. More than that and the exhibition design will begin to look cluttered and disorganized, and visitors will have a hard time figuring out what the "system" is and how to follow it. Labels on every available surface—rails, kiosks, walls, stanchions, and glass, and mounted so that they flip, turn, flow around and over graphics—plus electronic labels scrolling, projected, and pixilated are too much in one exhibition!

LABEL LENGTHS

All types of labels should be kept as brief as possible. Titles are usually fewer than ten words. Orientation, introductory, and section labels, which are typically too long—over three hundred words—should be edited down and broken into shorter paragraphs (twenty to thirty words each). Longer introductory labels may be necessary if that is the only type of interpretive label in the exhibition, as might be the case in an art museum. Simple captions (one or two sentences) or extended captions (short paragraphs, plus illustrations) should be visually oriented, concrete, and interrelated.

The next chart reviews typical label lengths and types, but bear in mind that the question, "How many words should there be in a label?" is better asked as, "How many words does this label need to have?" And remember: Stick to the point or ideas that support the big idea best. For more about the recommended number of words in different types of labels, see chapter 7.

Main Types of Interpretive Labels	*Purpose*	*Number of Words*
Exhibition Titles	to attract attention to inform about the theme to identify	1–7
Introductory Labels	to introduce the big idea to orientate visitors to the space	20–125
Group Labels	to interpret a specific group of objects to introduce a subtheme or section	20–75
Caption Labels	to interpret individual objects, models, phenomena	20–75

EXAMPLES OF INSTITUTIONAL SYSTEMS

Some museums develop institutionwide labeling systems that identify the type and purpose of the various labels used in the galleries. These not only

ensure consistent presentation of information to visitors, but having such a system also helps the museum communicate clearly. Museums may use different terminology for the types of labels they use, but, as seen from the examples below, they are more similar than they are different.

Victoria & Albert Museum[4]

- Introduction
- Section panel
- Theme panel
- Subtheme label
- Standard label
- Group label

Oakland Museum of California, Art Gallery[5]

- A labels address the major theme section of the gallery
- B labels address a miniexhibition within the gallery
- C labels address subgrouping within a miniexhibition
- D labels are extended object labels written by the artist Jaime Cortez
- E labels are extended object labels written by OMCA staff

The Getty Museum of Art[6]

- Branding title
- Exhibition title/gallery name
- Introductory statement
- Section, focus, diagrammatic texts
- Object label

The Liberty Science Center has a set of guidelines that incorporates all kinds of signage, not just the exhibition labels.[7]

- Title/zone overview
- Environmental graphics
- Directional signage
- Donor credit signs
- Content interpretive panels or labels

- Instructional signs
- Artifact labels
- Reader rails
- Fast facts
- Updates
- Media interactive
- Flip books

"RANDOM ACCESS" TO THE TYPES OF LABELS

To test the idea that labels are able to stand alone, or can be read out of order, take all the labels of a certain type (e.g., all the captions, all the section labels) and scramble them up. Pull one out. If this is the first label that a person reads in the exhibition, will it serve as a good entry point? Select a set of three or four at random out of the pile and read them. Do they make sense in that mixed-up order? If you read only one-fifth of the labels, will they still convey the big idea? If labels can pass this test, they will serve visitors well in the random, out-of-sequence, incomplete way that people typically move through an exhibition.

BEYOND LABELS

More lengthy exhibit interpretation can and should be presented in formats other than labels. Besides inexpensive single-page handouts, newsprint, or brochures that visitors can use in the museum or take home, there can be books or the catalog to browse through (tables and chairs provided), laminated portable labels to carry around the gallery and put back, and catalogs for purchase. Videos, audio tours, iPads, computer databases, websites, and demonstrations by staff can provide other means and modes of presenting interpretation and activities. All of these supplementary forms of interpretation will allow interpretive labels to remain brief, as they should be.

Good exhibitions will skillfully combine several different types of labels, using them in a consistent manner. They need not conform to the exact types described here, but whatever form they take, each type of label should have a recognizable function that is clear to visitors. Size, typeface, color, graphic design, length, placement, and content will all be cues for what the label's purpose is. Multiple cues should be used to ensure that visitors easily follow the logic of the exhibition designers' intent and messages.

The exhibition's big idea, the way the stories are told, and the system of types of labels, all must take into account the needs, motivations, interests, and knowledge level of the people who come to visit. The next section will discuss popular notions of learning styles, levels of information, label vocabulary and style, and ways to reach audiences of diverse backgrounds.

NOTES

1. Detroit Institute of Arts, "2013 Summative Evaluation Tracking and Timing Report, Parts 1–7" (unpublished report, Detroit, Michigan, 2013).

2. There are multiple references in Valerie Crane, et al. *Informal Science Learning: What the Research Says about Television, Science, Museums, and Community-Based Projects* (Dedham, MA: Research Communications Ltd., 1994). See Stephen Bitgood, ed., "Special Issue: Orientation and Circulation," *Visitor Behavior* 1, no. 4 (January 1987).

3. Paul Orselli, "Many Ways to Say Thanks," *ExhibiTricks: A Museum/Exhibit/Design Blog*, March 7, 2013 (11:44 a.m.), http://blog.orselli.net/2013/03/many-ways-to-say-thanks.html.

4. Lucy Trench, "Gallery Text at the V&A: A Ten Point Guide," *Victoria & Albert Museum*, 2009, accessed July 7, 2014, http://www.vam.ac.uk/__data/assets/pdf_file/0005/177089/10808_file.pdf.

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6. J. Paul Getty Museum, *Complete Guide to Adult Audience Interpretive Materials: Gallery Texts and Graphics* (Los Angeles: J. Paul Getty Trust, 2011), https://www.getty.edu/education/museum_educators/downloads/aaim_quickguide.pdf.

7. Ann Neumann, "Liberty Science Center Graphic Standards" (unpublished document, Liberty Science Center, 2005). They will share this, and you might get an updated version.

II

CONSIDERING THE AUDIENCE

4

Who Is the Audience (and What Do They Want)?

Museum visitors are a diverse group of fairly well-educated, mostly middle-class people seeking a culturally oriented, leisure social outing. They come to the museum with a variety of interests, but despite their diversity, they have many expectations and needs in common.

As museums strive to increase attendance and reach new audiences (non-Anglo, nonaffluent, non-college-educated), the audience for exhibit labels will become even more diverse. Museum practitioners need not, however, become overwhelmed by the diversity of visitors' demographics, interests, and motivations. Although there is no such thing as "the average visitor," we have learned through visitor studies that there are such things as trends and patterns in a heterogeneous sample of visitors to a particular museum or exhibition.

DEMOGRAPHIC AND BEHAVIORAL SIMILARITIES

Museum visitors and their behaviors are surprisingly predictable in many ways. Given a representative sample, there are often many similarities in who they are, what they like, and how they visit at many museums.[1] For example:

- A significant proportion of visitors come for a social occasion, as a social group. Many of these groups include children.

- Gender ratios (percent males and females) are often not significantly different.
- Teenagers are underrepresented in many different types of museums.
- The most popular elements in an exhibition will attract a diverse cross-section of visitor types. When something "works," it tends to work for many kinds of people.
- More people read short labels than long labels.
- If visitors cannot understand or personally connect with part of an exhibit, they will skip it.
- Visitors of all ages are attracted to exhibit elements that are more concrete and less abstract.



FIGURE 4.1
What's the most important thing in any exhibit? The visitors. Are they paying attention? Are they engaged? Do the exhibits help them feel competent? Whole-body interactives like this dynamic "shadow wall" at the Museum of Science and Industry get them started.

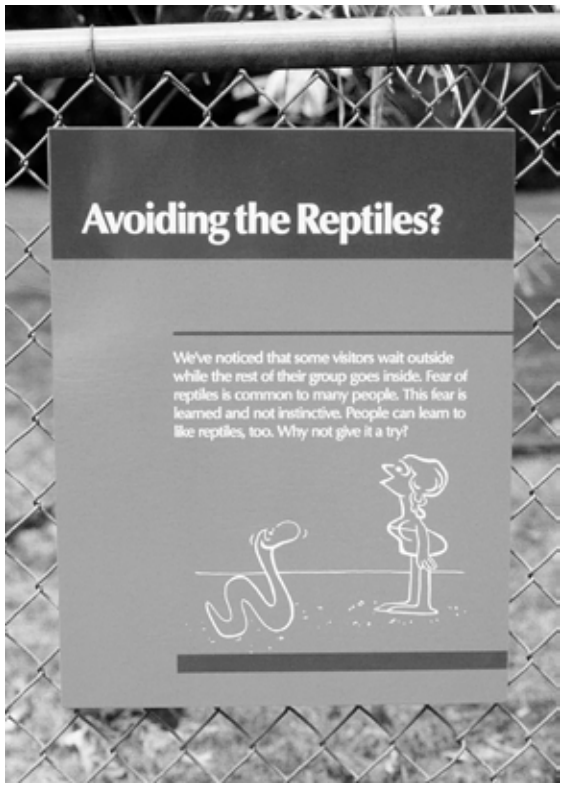


FIGURE 4.2
This label at the Honolulu Zoo says that the fear of reptiles is a learned behavior and that you can learn to like them. Labels that acknowledge visitors' preferences show that the institution knows its audience.

There are also some interesting, but not surprising, differences in types of audiences:

- There are more groups without children in art museums than in most other types of museums.
- Children are more likely to touch and manipulate interactives before adults.
- Children are less likely to read labels than adults are.
- Groups with children allocate their time differently than groups of adults only, although both groups may spend the same amount of time overall.

The most striking differences between types of visitors are age related, and these differences are primarily associated with children's uninhibited exploratory behavior. Children instinctively investigate things with their hands, but adults may need to be invited to touch and participate ("OK to touch").



FIGURE 4.3
Interactive stations work best when they are just as much fun for adults as for kids. This family is making string calendars at the *Dena'ina* exhibition at the Anchorage Museum.

Where adults seek structure or directions, children charge ahead without them.

UNIVERSAL HUMAN CONCERNS

Audience differences along lines other than age are more difficult to detect, probably because human adults are highly variable. Other than the characteristics noted above, there are few demographic trends that hold true across many types of museums. Many of the expected differences between subaudiences (e.g., group size, gender, or visitation patterns) that we think might be significant often turn out to be less so than expected. For example, when the Cleveland Museum of Art compared frequent and infrequent visitors, they reported, "We learned that even frequent visitors are not as familiar with the Museum, its art works, and art history as we had assumed them to be."[2]

When the Canadian Museum of Civilization decided to make an exhibition about the life of Samuel de Champlain—one of the best-known and

most colorful figures in Canadian history—they anticipated that English Canadians and French Canadians would have different viewpoints about the topic. Results from their front-end evaluations showed that there were no appreciable differences. For other topics, however, the museum has found important differences. Assumptions about what the audiences know need to be verified or modified.

While every visitor's experience will be unique, experiences of human beings are governed by many factors that most of us have in common. Our diverse interests, intellects, and educational and economic backgrounds are all grounded in many fundamental similarities, such as the need for physical comfort and nonthreatening spaces, feelings of hunger and fatigue, and the desire for self-actualization through personal challenges. When these needs are met, we feel more competent and confident.



FIGURE 4.4
Twenty-first-century audiences appreciate revitalized dioramas with new interpretation, even ones that include the impact of humans on nature.

Museums must constantly be aware of these factors and integrate visitors' basic drives ("Where's the toilet?") before attempting to help them achieve higher levels of consciousness ("What the heck is that?"). We must also keep in mind the visitors' emotions, their yearning for continuity, love of a good story, ability to see and seek patterns, and natural spirituality. By keeping in mind the commonalities that unite the way our multicultural, multigenerational audience uses exhibitions, exhibit developers can have a more realistic basis for planning displays that will work for more people, and label writers will be gratified because their words will be read.

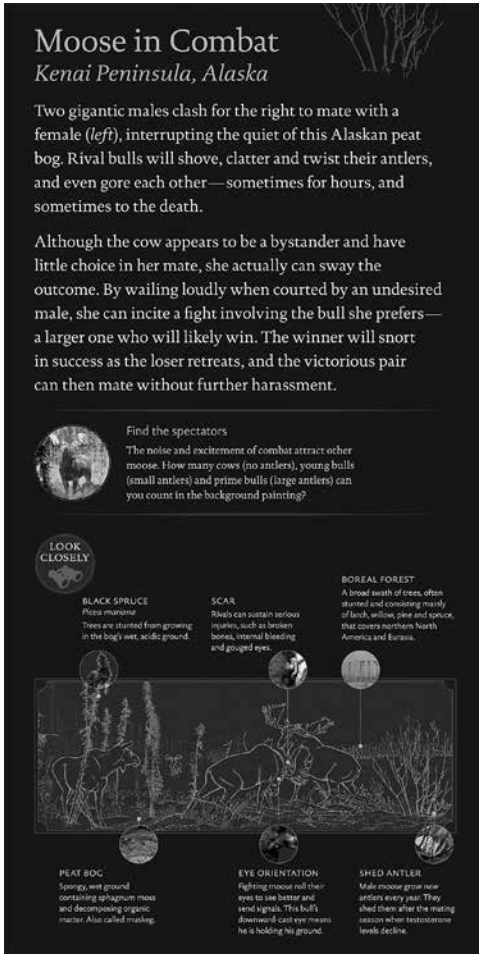


FIGURE4.5
New labels for dioramas at the American Museum of Natural History address visitors' questions and direct attention to details.

CASE STUDY

NEW LABELS FOR OLD DIORAMAS

by Lauri Halderman, Senior Director of Exhibition Interpretation, American Museum of Natural History

In 2012, as part of a larger diorama restoration project, the American Museum of Natural History unveiled new interpretive labels in the Hall of North American Mammals.

The previous labels—some hand lettered, perhaps dating back to the hall opening in 1942—provided factual information but largely ignored narrative, leaving visitors to wonder what was happening in many of these dramatic scenes. In the Alaska moose diorama, for example, two enormous males fiercely butt heads while a female intently looks on; the old label began, dutifully, "Moose are found in suitable localities in northern Europe, Asia and North America."

Today the Exhibition Department interpretation team, working closely with curators and in consultation with senior administration, writes all new museum labels. For this project, the writing team first launched an informal tracking and observational study to understand how people used the hall. The study revealed that visitors stopped at an average of ten of the forty-three dioramas but typically looked at only one or two labels—out of more than sixty. Clearly the labels weren't working well.

To explore what people wanted to know, writers met with Education staff and volunteers who often worked in the hall and also set up temporary "question posts" at two dioramas, using sticky notes to compile visitors' questions on poster boards. People wondered about the size, diet, and behavior of the featured animals as well as conservation status, which animals were closely related, and how the dioramas were made. A bright five-year-old asked, "Why are the moose fighting?"

In brainstorming sessions with the curator and a consulting mammalogist, the writers and graphic designers began hammering out new ideas for the labels. In general, the team advocated for more label hierarchy and shorter, discrete "chunks" of information, including brief introductions that would take their cues directly from the scenes. "Two gigantic males clash for the right to mate with a female," the writer drafted as a new opening for the moose label. "Rival bulls will shove, clatter and twist their antlers, and even gore each other—sometimes for hours, and sometimes to the death."

The project team wanted to retain some existing features of the labels, including scene keys—illustrations of the dioramas that identify noteworthy features—and range maps. New ideas included a block of "fast facts" with basic information on animal size and diet, illustrated sidebar stories, life-sized paw prints, and "look closely" prompts that challenge visitors to find hidden details in the dioramas. An artist created new line drawings of the featured mammals as well as many plants and simplified scenes to be used for each key. The museum's photographers shot close-up details of each diorama to illustrate the call-outs on the keys.

After the team created prototype labels and put them up in the hall, small groups of visitors were invited behind the construction wall to give feedback to Exhibition and Education staff. Many of the new features were popular: Adults as well as kids gave high marks to "look closely," "fast facts" made finding basic information easy, and the short sidebars had highly memorable information.

With this feedback in hand, the team turned to final label writing and design. Although many changes could be implemented, regrettably, some issues could not be addressed. One is the location of the labels. For all but the smallest dioramas, the labels have always been vertical and placed on either side of the scene—not horizontal and below the glass, where they would be more accessible. At the large dioramas, visitors must

walk away from the scenes in order to read the labels. But horizontal test labels cast a reflection onto the diorama glass, so the team had to stick with the two vertical labels: one with information about the mammal, and the other, usually, devoted to the habitat.

In other ways, too, the label design had to be careful not to violate the ambience of the historic hall. During prototype testing of the keys, visitors said that large, color photos with callouts were easiest to understand. But the museum chose black-and-white line drawings for the keys because they were less intrusive; color on the labels was kept to a minimum to showcase the dioramas. Giving the designers much-needed flexibility were new low-voltage LED light sheets, one behind each label, allowing the brightness of each label to be individually dimmed: The goal was to make the labels legible with no obvious source of illumination. But even dimly lit, the first prototype labels were, at forty-eight inches, thought to be too conspicuous. The team shortened them by about eight inches and thus cut the paw prints at the bottom. These had been intended specifically for young visitors but had not tested as well as other elements—but then, the team did not test the labels with as many children as adults.

An internal observational study reveals that visitors *are* now looking at and reading more labels—among English speakers, reading has increased 150 percent. Nearly twice as many visitors with children now refer to the labels, and while visitors stop at about the same number of dioramas, they are spending 30 percent longer in the hall.

WHAT ABOUT VISITORS TO "SPECIALTY" MUSEUMS?

A Jew, a Buddhist, and an agnostic walk into the Billy Graham Museum. The museum feels welcoming. Rather than being purely a shrine to Billy Graham—which might be appealing only to evangelicals—the exhibits are informative, engaging, and meaningful to all three of them. They have a really good time watching the old video of Billy Sunday and his whole-body



FIGURE 4.6
Exhibitions about previously marginalized groups can address specific issues and speak inclusively to broad audiences. *Out in Chicago* at the Chicago History Museum was developed with extensive community involvement and proudly included this display of dykes on bikes.

preaching; reading the letters addressed to "Many Apples Many Sodas" that still got to Billy Graham in Minneapolis, Minnesota; and having the experience of going to heaven (white clouds, blue sky, mirrors, Bach). They learn some amazing things about the history of the evangelical movement, and they leave feeling confirmed as human beings.

Museums that exist to celebrate a particular religious, cultural, historic community, or personality, product, or objet d'art are clearly targeting a specific audience. But those visitors are often in the company of others who may not share their enthusiasm or level of knowledge about the topic of the museum. Thus, the exhibits—to attract and hold the interest of a broader audience—must have some appeal to novices as well as to the specialists. So there is a socially motivated reason for museums to be more broadly appealing. There is a financial consideration as well. For the specialty museum to stay alive in the current economy and into the future, it needs to court the non-

believers and the next generation. The Studebaker Museum, the World War II Veterans Museum, and the Ukrainian Museum have to respond and adapt to the changes in the world—more so than, say, the Rattlesnake Museum and the Mustard Museum—to keep people coming in the doors.

SURVEYING VISITORS

Visitor surveys are a common means of finding out more about who the visitors are. But many of the questions asked do not illuminate the answers in ways that can help exhibition developers and label writers do a better job. Information about the visitor's zip code, income level, educational history, or gender offers the label writer little. More useful are visitors' answers to questions that relate directly to their understanding of and self-relevance to the exhibit's topic, such as, "Do you have any special interest, knowledge, or training in (the subject of the exhibition)?" Their feedback will reveal information about hobbies and other leisure activities and family history, as well as school- or job-related interests. These will give label writers the "hooks" to interest readers. For example, from data gathered in Chicago area museums,[3] we know that the planetarium attracts visitors with interests in telescopes (not an unexpected finding) and surveying (a surprise). Visitors to the natural history museum often have pets, are bird watchers, and have taken courses in biology. Aquarium visitors like to go fishing, eat fish, and keep fish at home (fresh- and saltwater hobbyists). The maritime museum attracts people interested in shipwrecks, boat building, and boat operation. There are also specific interests that some visitors to a maritime museum, a planetarium, a natural history museum, and an aquarium have in common, such as antique collecting, scuba diving, navigation, and employment as a teacher. Including references in labels to the interests your visitors are most likely to have in common can make labels more appealing to more people.

Other ways to find out more about your visitors through front-end and formative evaluation strategies will be covered in chapter 18, "Evaluation during Development."

THE TRAP OF VISITOR TYPOLOGIES

Casual observations have led some people to believe that there are different types of visitors who can be identified by the way they use exhibitions, such as "streakers"—people who go through fast and stop at only a few elements;

"samplers" or "browsers"—people who spend some time, and stop at a few things that seem to interest them; and "studiers"—people who spend more than the average time, looking at one thing for a long time, or looking at lots of things.

However, much of what we know about visitor behavior in museum exhibitions is based, unfortunately, on poor examples of what effective educational exhibitions should or could be. Visitor typologies, such as "streakers" or "browsers," have evolved based on watching visitors in exhibitions that encourage streaking, or that make browsing the most viable exploration tactic.[4] The infrequency of "studiers" is not surprising given the propensity for displays with numerous, long, technical labels that discourage the reading behavior of adults, not to mention children.

There are several books that describe thinking about serving diverse audiences. Kathleen McLean, in *Planning for People in Museum Exhibitions*, makes this point: "If we want exhibitions to be truly engaging, then all exhibit professionals, not only the educators and evaluators, will have to be communicators and audience advocates." McLean argues for ways to make exhibitions better for the public as well as for many ways to make the exhibition development process function better within museums.[5]

Lisa Roberts, in *From Knowledge to Narrative: Educators and the Changing Museum*, reviews the rise of professionalism of museum educators and its impact on the ways museums present knowledge.[6] She contrasts the curatorial-positivist stance ("Here is our knowledge and truth for you to learn") with a multiple-meanings context ("Here is what some people believe to be true"). This shift of authority—and the acknowledgment of uncertainties and disagreements about what we know—within museums, whether science, history, or art, is part of a larger academic questioning about our assumptions in every major discipline. Roberts credits museum educators for the trend in making exhibition narratives more inclusive: "It is educators whose sensitivity to visitors has brought them to question the comprehensibility, significance and voice of exhibit messages."

MISUNDERSTANDINGS ABOUT AUDIENCES

There are five common assumptions about audiences that, I believe, do not enhance the goal of making exhibitions more effective, visitor oriented, and well used by diverse audiences. Although they may sound good on the surface, further scrutiny reveals some misunderstandings.

1. The assumption "Exhibit planners should decide which portion of the audience is most important to reach with each exhibit message, and communicate that message using media that appeals to that portion of the audience," can easily lead to an exhibit with too many different messages. A better, more focused exhibit plan reads, "Exhibit planners should decide what the important exhibition messages are and communicate them using whatever media is most suited to that message, in a way that will reach the broadest possible audience." While the intent—to appeal to broad audiences—for each of the above statements is the same, the implications for how to do it, and the potential for doing it successfully, are quite different. It works best when media are selected for their appropriateness to deliver the message, and each message is aimed to reach as many people as possible. Thinking about diversity should lead to inclusiveness, not exclusion.

2. The assumption, "All visitors will find something of interest to them if you put lots of information in labels in an exhibition," is misinformed. Instead, it makes for an overwhelming environment dominated by walls covered by words, which will decrease visitors' willingness, ability, and motivation to explore labels carefully. Given that most visitors have a limited amount of time to spend in an exhibition, visitors to a large, dense layout will find it difficult to experience a high proportion of it. Instead of feeling intrigued, satisfied, and energized, many visitors become overwhelmed and worn out. They will feel as if they need to come back again to "do it all" but probably have no intention of doing so. When you delete things that do not appeal to the broadest possible range of visitors—like labels with lots of text or complex and abstract topics—utilization of all elements can actually increase (see examples in chapter 7, "The Number of Words").

When visitors get to select from a smaller array of elements, each of which is appealing, they spend more time doing something that is interesting to them. The experience will be, "Oh boy, another neat thing," instead of spending time searching for something to connect with: "Nope, not that one; nope, not that one either."

3. This assumption, "It is difficult to enable visitors to relate the subject to their lives and to examine their attitudes, values, and beliefs because most visitors arrive with limited time and knowledge about the subject," simply passes the buck. More likely, it is difficult for visitors to relate because of the detailed, complex nature of the subject and because the exhibition is not geared to the

limited time and lack of specialized knowledge most visitors bring with them. Should we try to change the visitors (e.g., increase their visual literacy before they arrive, or bring them up to speed with an obligatory introduction video), or should we change the affordances of the exhibits themselves? To me, the latter seems far more within museum practitioners' area of responsibility.

4. Here's another common and especially pejorative assumption about visitors: "We must be careful not to take all exhibits down to the lowest common denominator. Shortening label copy to the point that virtually any visitor will read it denies the more sophisticated or repeat visitor the opportunity to learn more." It is hard for me to believe that some museum practitioners still think this is true. Have they ever closely watched visitors in their galleries and seen how hard they try to understand what is going on, and how they typically underutilize what *is* there? Have they ever surveyed their visitors for their prior visits, or knowledge, interest, and training in the subject, and seen what percentage of them are actually "sophisticated" or repeat visitors? Have they ever observed and listened to a focus group of visitors talking about their feelings of being intimidated, overwhelmed, or lost in museums? Have they ever tried out a mock-up of a label or interactive device with a small sample of visitors and seen that it did not work the first or the second time? Any one of these visitor studies will quickly dispel the notion that there is such a thing as a "lowest common denominator" and will make it clear that all of our visitors are worthy of our best efforts, and that we should always seek to please the *commonest* common denominators.

The key is to include sophisticated concepts as long as they appropriately support the big idea, and to be sure to use a nonexclusionary vocabulary.

5. Several researchers are promoting the idea that "visitors' motivations and identities will virtually predict their behaviors in exhibitions." Certainly these characteristics play an important role in determining visitors' choices to attend a museum or an exhibition, but we should not expect those characteristics to be immutable, especially if they find themselves in a stimulating, engaging exhibition with a meaningful topic geared for a broad audience. Regardless of how authentic the incoming types may be (and the museum can't change who they are before they come), the museum has the opportunity and responsibility for the environments these visitors encounter inside the doors.

I agree with the movie critic Roger Ebert, a populist, who said, "Everyone should get it."[7]

THINK INCLUSIVELY

The tendency to subdivide audiences into "types" and pigeonhole them with stereotypic characteristics will not lead, in my opinion, to better, more thoroughly used labels and effective exhibitions overall. Predetermined categories of visitor behavior may not be as useful in exhibit design and evaluation as one might like. If exhibit developers would think about the whole audience as time-limited, motivated nonexperts, of which almost everyone is a nonsequential "sampler," they would be much closer to the truth. The overarching challenge is to encourage more visitors to sample more exhibits and sample them for longer times. Assume interest.

Imagine an exhibition where the majority of visitors use the majority of available exhibit experiences—where children work with other children or adults, where adults talk and read out loud to each other and to their children, where visitors interact with others in different social groups, where people of all ages and learning styles are tempted to linger longer instead of rushing on to the next exhibit or exiting at the first opportunity. It is possible! Good orientation, a clear big idea, and good labels will all help make it happen, as timing-and-tracking studies found for topics as diverse as fossilized tree resin (*Amber: Window to the Past*), polar exploration (*Shackleton*), and swimwear (*From Bustles to Bikinis*).[8]

BUT WHAT DO THEY WANT?

Given that most exhibit elements and their labels are currently not used by the majority of visitors (Anglo, affluent, college educated, and otherwise), a radical transformation in label content and form is needed if we expect to enlarge our appeal both to current and broader audiences. This transformation can be guided in part by listening to what visitors say they want and what they feel the characteristics of ideal exhibitions are.

In a study by Alt and Shaw, visitors to the Natural History Museum in London compared old and new exhibitions and, in their own words, described what they thought contributed to the "ideal" one.[9]

Of the characteristics of ideal exhibitions listed below, more than half are directly related to labels that captivate and communicate quickly, easily, and clearly:

- It makes the subject come to life.
- It gets the message across quickly.
- You can understand the point(s) it is making quickly.
- There's something in it for all ages.
- You can't help noticing it.
- It allows you to test yourself to see if you are right.
- It involves you.
- It deals with the subjects better than textbooks do.
- The information is clearly presented.
- It makes a difficult subject easier.
- It gives just enough information.
- It's clear what you're supposed to do and how to begin.
- Your attention isn't distracted from it by other displays.

In focus group studies done at Brookfield Zoo in preparation for renovations of their bird exhibits, visitors discussed the positive factors that contributed to museum learning experience using these expressions and words:[10]

- It is memorable.
- It's an experience that involves your senses.
- You are gently guided to make discoveries.
- It is a personal experience.
- You get lots of opportunities to investigate and make observations.

The Denver Art Museum's interpretive project looked closely at its audience and what visitors wanted.[11] Researchers found that most visitors were "art novices" with high interest in art but limited art backgrounds. The novices' criteria for liking an art object were

- that it have a pleasing kind of beauty
- that it be very intricate and detailed
- that its message be understandable to them

For a moment, look at that list and think how it might apply to novices at any type of museum. Change art to history or anthropology or science and think about the pleasing beauty and intricacy of an animal, or a piece of rock, or an electric engine, and then think about the kinds of labels that would work in each case.

The findings from all three studies above have applicability to many other museums and situations. Most visitors are eager to learn, but they do not want to spend much time or effort in trying to figure out things. Good labels can attract, communicate, inspire, and help visitors get what they are seeking.

WHAT THEY DON'T WANT

The opposite experiences from what are described above by visitors would be exhibits that visitors never noticed in the first place or forgot about soon afterward. Visitors do not want exhibits that do not attract or involve them actively or personally; that are unpleasant, irritating, obnoxious, or crowded; that are authoritative, confusing, and condescending; that do not allow them to exercise their powers of curiosity and scrutiny; that are foreign, strange, boring, obvious, unclear, or overwhelming. The result? "Your labels make me feel stupid."[12]

While few exhibitions have all these characteristics, these negative qualities exist in too many places. Most negative features, fortunately, can be eliminated through more careful planning (refer back to discussions of big ideas) and testing (discussed in the chapters on evaluation).

Visitors vote with their feet as they choose whether or not to spend time in exhibitions. If they find things they like, they stay longer. "What visitors bring to the exhibit determines the template onto which an exhibit can be expressed; but good exhibits can make this template sing!" say John Falk and Lynn Dierking, coauthors of *The Museum Experience*.[13]

Who is the audience? A self-selected group of semimotivated, time-limited, mostly first-time visitors, who are novices but are curious about the subject matter. What do they want? They are seeking gratification through feelings of competence and an enjoyable social experience. If you select elements and write labels for *them*, chances are you will satisfy the vast majority of your visitors.

THE AUDIENCE BRINGS THE EXHIBITS TO LIFE

Another way to think about audiences is to realize how they, as an entity, are a vital part of the fundamental purpose of museums as places that exhibit and interpret collections and phenomena. We talk about making exhibitions come to life for the visitors; what about the way *visitors* bring the *museum* to life? American artist Michael Asher expressed the visitor's role in activating the museum's purpose in an artwork at the Art Institute of Chicago for the 74th American Exhibition.[14] Asher hired groups of viewers to stand in front of different paintings in one of the museum's permanent collection galleries. Asher's Chicago work *was* the viewing process—the intersection of the museum's presentation and the viewer's perception, neither one possible or complete without the other. When museums recognize and fully appreciate the audience's vital function, they become more willing to integrate new ways to meet the needs of visitors.

Current notions about diverse audiences stress the differences between people, who they are, what they want and need, and other factors that make



FIGURE 4.7
Artist Michael Asher captured the idea that audiences activate museum spaces in his exhibit at the Art Institute of Chicago.

these differences seem overwhelming. Yet within the diversity, there are also many similarities—which were the focus of this chapter. Some of the effective ways of satisfying critical differences in visitors' approaches to exhibitions are the subject of more attention in the next two chapters.

NOTES

1. Some of these trends are seen repeatedly in general museum visitor surveys. For more specifics, see articles by Judy Diamond, "The Behavior of Family Groups in Science Museums," and Randi Korn, "An Analysis of Differences between Visitors at Natural History Museums and Science Centers" and "The Relationship between Exhibit Characteristics and Learning-Associated Behaviors in a Science Museum Discovery Space," by Boisvert and Slez. Also see Steve Bitgood's special issue of *Visitor Behavior* on "Exhibit Labeling," vol. 4, no. 3 (1989).

2. John E. Schloder, Marjorie Williams, and C. Griffith Mann, *The Visitor's Voice: Visitor Studies in the Renaissance–Baroque Galleries of The Cleveland Museum of Art 1990–1993* (Cleveland, OH: The Cleveland Museum of Art, 1993).

3. These data were from unpublished formative evaluation studies collected by Serrell & Associates over a variety of small samples.

4. Jay Rounds writes challenging articles that shed new light on old issues. See "The Curiosity-Driven Museum Visitor," *Curator: The Museum Journal* 47, no. 4 (2004): 389–412.

5. Kathleen McLean, *Planning for People in Museum Exhibitions* (Washington, DC: American Association of Science-Technology Centers, 1993).

6. Lisa C. Roberts, *From Knowledge to Narrative: Educators and the Changing Museum* (Washington, DC: Smithsonian Museum, 1997).

7. Quote from the movie *Life Itself* about Roger Ebert.

8. Beverly Serrell, *Paying Attention: Visitors and Museum Exhibitions* (Washington, DC: American Association of Museums Press, 1998).

9. M. B. Alt and K. M. Shaw, "Characteristics of Ideal Museum Exhibits," *British Journal of Psychology* 75 (1994).

10. "Be a Bird Focus Group" (videocassette, Brookfield Zoo, June 1986).

11. Melora McDermott-Lewis, *The Denver Art Museum Interpretive Project* (Denver, CO: Denver Art Museum, Winter 1990).

12. Gail Gregg, "Your Labels Make Me Feel Stupid," *Art News*, Summer 2010, http://www.artnews.com/2010/07/01/your-labels-make-me-feel-stupid/.

13. John H. Falk and Lynn D. Dierking, *The Museum Experience* (Washington, DC: Whalesback Books, 1992).

14. Anne Rorimer, "Michael Asher and James Coleman at Artists Space," in *Michael Asher/James Coleman, June 2–July 2, 1988* (New York: Artists Space, 1988).

5

Audience Fragmentation

Learning styles, multiple intelligences, visitor identities, visitor typologies, and other educational models and theories for describing different portions of the audience have some important, but limited, applications for the unconventional, informal, fast-paced nature of learning (seconds, not semesters) in museum exhibitions.

The previous chapter emphasized appealing to visitors' commonalities. In this chapter we consider ways to make exhibitions that are appealing to differences—in styles, ways of thinking, motivations, and preferences—by integrating certain conditions and choices in the museum learning environment.

TYPOLOGIES OF THINKING, MOTIVATIONS, VISITING

While learning styles probably have the most relevance and practical application to making exhibits that work for different kinds of learners, there are many other ways of looking at audience fragments—some that have become widely used—to better understand our visitors' needs and motivations. Fortunately, we've come a long way from the bovine references to "grazers" and "browsers," or "streakers" and "studiers," to sobriquets that are less hierarchical and more helpful.[1] Most of the typologies we hear today resonate with the same tendencies we've seen in visitors after watching them for a while.

Since the 1990s we have seen an expansion in the number of ways to segment and describe learners and audiences. A selection of the theories

and assumptions are briefly described below, from large studies with broad applications to smaller, more local investigations, and concluding with a discussion of learning styles. These are helpful ways of thinking about the differences that visitors bring with them as you develop exhibitions and write labels.

In all of the examples below, it should be stressed that the individual intelligences, typologies, motivations, identities, segments, or interests are not necessarily related to any one demographic, and people can be influenced by the situation they find themselves in—that is, context can elicit different kinds of engagement.

Gardner's Multiple Intelligences

Howard Gardner's theory of multiple intelligences describes different ways that individuals engage in thinking. According to Gardner, every individual has seven different intelligences:

Musical

Kinesthetic

Logical-Mathematical

Spatial

Interpersonal

Intrapersonal

Naturalist

These intelligences link to specific regions of the brain.[2] Gardner devised his theory of multiple intelligences in the context of the classroom, but they have implications for museum exhibits as well. In particular, Gardner's theory of "pluralizing"—described here in the context of general education—has resonance for museum exhibit developers:

> The educator should decide on which topics, concepts or ideas are of greatest importance, and should then present them in a variety of ways. Pluralization achieves two important goals: when a topic is taught in multiple ways, one

reaches more students. Additionally, the multiple modes of delivery convey what it *means* to understand something well. When one has a thorough understanding of a topic, one can typically think of it in several ways, thereby making use of one's multiple intelligences.[3]

Falk's Visitor Identities

John Falk, visitor studies and free-choice learning guru, has created a model of five visitor identities to help explain the various motivations visitors have for why they visit and how they approach the free-choice learning environment.[4] The five identities are

Explorer

Facilitator

Experience-Seeker

Professional/Hobbyist

Recharger

Falk argues that these identities predict visitors' behaviors and the choices they make during a museum experience and are useful designations for marketing purposes in all types of museums. These identities are not hardwired in the brain or immutable dispositions and can be fluid depending on the context and content of museum exhibits.

The Tate's Eight

The Tate Museum used eight segments to describe its populace during one visitor study in an art gallery to test its assumptions about the interpretive materials provided in the gallery:[5]

Aficionados

Actualisers

Sensualists

Researchers

Self-Improvers

Social Spacers

Site Seers

Families

These eight were part of a study done in 2004 on visitors' motivations and behaviors. Like Falk's, these typologies were defined by visitors' answers to diagnostic questionnaires.

Field's Five

The Field Museum in Chicago recently commissioned a study to reveal their visiting segments and came up with five types of visitors, based on psychographic measures in their attitudes about digital technology used in exhibit interpretation:[6]

Curious Activity Seekers

Contemplative Traditionalists

Social Explorers

Parent Facilitators

Disengaged

This information will be useful for planning new exhibits and media for interpreting them at the Field as they ride the digital wave. It is encouraging to hear that the percentage of types who are motivated to learn, read, and interact with exhibits in the museum far outnumber the ones who are there just for togetherness or are being dragged along by others.

Pekarik's IPOP

Andrew Pekarik at the Smithsonian Institution's Office of Policy and Analysis has distilled four typologies, "IPOP," a model of the visitors' museum experiences based on numerous studies of visitors' reactions to exhibits and how they described their primary interests in approaching museum exhibitions:

Ideas

People

Objects

Physical

He talks about the notion of getting people to "flip."

> Recent interviews suggest that visitors are excited and pleased when some unexpected aspect of an exhibition opens up a preference category relatively unfamiliar to them. Sometimes people can "flip," that is have a strong reaction to a different type of experience than the one that generally drew them.[7]

Exhibit developers and designers can create multiple opportunities in an exhibit environment that may afford surprisingly positive reactions for visitors who might not have an incoming preference for the exhibition's topic or modalities. This is an important way of thinking about audience typologies and segmentation in general.

Shedd's Custom Six

Shedd Aquarium built a custom segmentation picture of its audience with one thousand telephone interviews of local residents (not just visitors) and came up with clusters of people who shared significant attitudes and behaviors. After eliminating the one cluster, "people whose leisure choices didn't even remotely include a visit to the Aquarium," they concentrated on the remaining six:

Young Urban Explorers

Fun-Loving Suburbanites

Idle Empty Nesters

Edutainment Enthusiasts

Enrichment Seekers

Shedd Critics

Shedd used the audience segmentation data to focus its marketing and advertising campaigns in ways that successfully increased attendance to exhibits, improved communication of Shedd's role in conservation advocacy, and modified its membership strategies to target different consumer benefits.[8]

MOTIVATIONS FOR TYPES OF VISITOR EXPERIENCES RATHER THAN TYPES OF VISITORS

Coming back more to the points that have direct implications for good interpretive label writing are the studies done by Jan Packer and her colleagues on measuring visitor motivations for educational leisure activities.[9] Using a scale (from zero—"not important" to six—"extremely important"), she asked visitors to rate themselves on twenty-five different reasons for visiting, which were grouped in five larger categories:

Learning and Discovery

Enjoyment

Restorative

Social

Personal Development

The Detroit Institute of Arts used a modified version of a longer checklist for part of its summative evaluation of the visitor experience after the DIA underwent massive restoration and reinterpretation efforts in the 2000s. The adjective checklist questionnaire had eighty-eight items that clustered in four main visitor experience dimensions:

Emotional

Emotional-Stimulation + Emotional-Appreciation + Cognitive-Fascination

Intellectual

Reflective-Engagement + Reflective-Connection + Cognitive-Attention

Physical

Physical-Activity + Self-Autonomy

Spiritual

Spiritual-Engagement + Restorative-Peace + Aesthetic-Wonder

Visitors could check off the adjectives presented with six prompts: "I felt"; "I experienced a sense of"; "It engaged me"; "It engaged my"; "As a result of my experience here today I now have"; "I am now more." The DIA checklist was filled out by 682 visitors surveyed at the museum's exit and was analyzed quantitatively for statistical differences by a host of visitor variables. In summarizing its usefulness, the study reported:

> The tool may be especially useful for developing and evaluating special exhibitions, which provide an ongoing opportunity to compare visitors' experiences with exhibitions of different subjects and interpretive approaches. Finally, information about the types of experiences that are most common among DIA visitors could provide a starting point for further research to inform the design of new marketing campaigns.[10]

LEARNING STYLES, CONSIDERED BROADLY

Learning styles are the different strategies people prefer to use in a learning situation: people's preferences for perceiving and processing information. They are based to a large degree on research about how children learn in formal educational settings, particularly how students solve problems. Styles are also linked to how our brains process verbal and visual information differently.

Museum practitioners find the concept of learning styles useful because it helps them characterize differences between the ways people learn. Bernice McCarthy developed a scheme based on a variety of studies about learning style, in which she identified four different types of learners and learning situations:[11]

Imaginative learners

Analytical learners

Commonsense learners

Experiential learners

People's preferred learning styles are influenced by their genes, their past experience, and the demands and opportunities of the present environment. It is important to remember, however, that all learners use and need all different kinds of learning experiences. One learning style may be more comfortable for a person in one situation, but not in another.

McCarthy's model has direct applicability to museum situations. Thinking about visitors as having different styles helps exhibit developers honor the diversity of museum audiences and encourages them to provide a variety of ways for visitors to perceive and process information. Thinking about styles also helps all museum practitioners accept the task of motivating people as a primary responsibility.

INCORPORATING VISITOR PREFERENCES INTO EXHIBITION DESIGN AND INTERPRETATION

Exhibitions can accommodate visitors' different learning styles, intelligences, preferences, and motivations by providing choices so that visitors can pick and choose exhibit experiences according to their liking. The three keys to making labels and exhibitions appealing to different learners are

1. providing a variety of choices for visitors,
2. making those choices clear and apparent to visitors, and, most importantly; and
3. regardless of which choices are made, making the variety of choices available add up to a greater whole when experienced together.

Most of the options for appealing to visitors' different learning preferences are compatible with each other, but a few are somewhat exclusive. Careful planning of options most suited to the exhibition's big idea will help exhibit developers pick the right ones. While these alternate ways of considering the preferences and abilities of learners are worthwhile, they should be used in ways that do not get stuck in simplistic, divisive stereotyping of visitor characteristics or get sidetracked into an overload of choices.

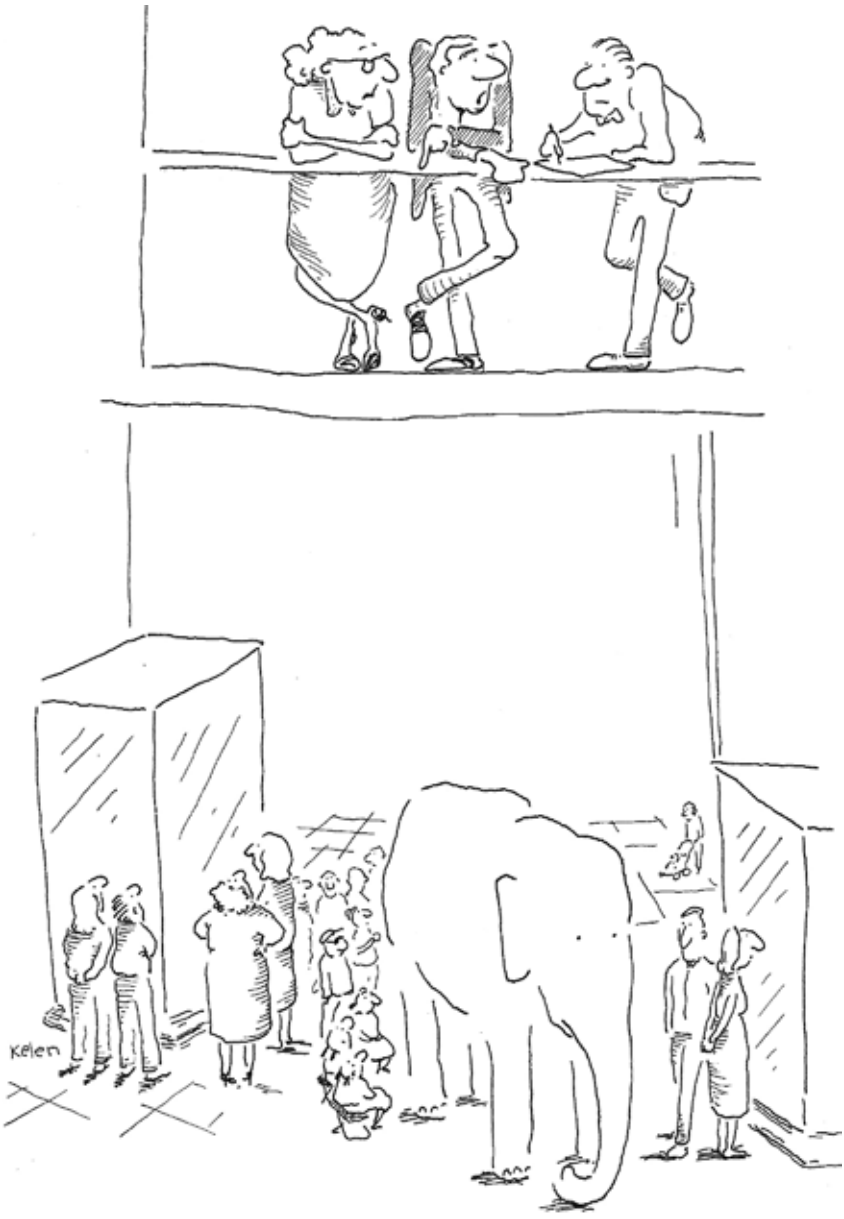


FIGURE 5.1
What are your visitors doing in the galleries? What kinds of exhibits attract them? Museums can observe their audiences in addition to distilling their "types of visitors."

Each set of choices contrasts people's various preferences and suggests how to deal with them, particularly as they relate to verbal information and approaches to interpretation. They also involve the physical and conceptual layout of the exhibition, the environment and experiences, and the social aspects of visiting an exhibition—the informal conditions and choices visitors face in museums.

1. Sequenced or Unsequenced

These choices relate to visitors' preferences for dealing with the physical space of the exhibition and differing psychological comfort levels with orderliness or a more free-form approach.

Some people like to have the recommended order or pathway laid out for them; they do not want to miss anything, and they want to see things in the "right" order or at least to be aware of what the suggested order is. People who like sequencing will appreciate having floor plans, introductory labels, numbered exhibits, linear or one-way flow, self-guiding materials, arrows, alternate pathways made clear, and choices apparent but not forced. In chaotic or confusing exhibition layouts, these people feel uncomfortable.

Other people do not care what order things come in and want to be surprised or free to do it any way they want. People who like free flow will appreciate being able to skip ahead, or backtrack, without a one-way path. There can be a sequence, but they feel free to ignore it.

Exhibitions that have a clear sequence or linear structure and also offer the option to skip around will satisfy the people who want a plan without annoying those who don't. Smaller exhibitions (less than 2,500 square feet) have the advantage of allowing visitors to get a sense of the whole space at a glance as they walk into it and to decide quickly about their own sequence and pace.

The design of the exhibition environment plays a large role in offering or encouraging a sequence or pathway if there's meant to be one. Boundaries between sections will be much clearer to visitors when the architecture, lighting, and colors of the exhibition support the logic of different thematic areas. Labels alone do not provide adequate cues.

2. Pace Controlled or Not Controlled

People have different preferences about having control over spending time and the timing of experiences in an exhibition (some of which might also be highly sequenced).

Some people like exhibit elements that have a built-in structure or pace and a set time limit or duration, such as a video, audio, or a docent-led tour. If an exhibit element has a set time span, it should be clear to the visitor; for example, "Push button for a three-minute video," or "Fifteen-minute tour begins here." (Disneyland rides are examples of extremely pace- and sequence-controlled experiences.)

Other people like to choose their own pace, to take a brief glance or spend more time at one thing. These people will also appreciate knowing beforehand what the time limit of an element is, if there is one. These people might feel trapped if they find out—after the fact—that, for example, they *have* to sit through a video before proceeding to the next exhibit area.

Most pace-controlled exhibit experiences will not be a problem for visitors who prefer to control their own pace if they have the option to ignore them.

3. Peer Group or Expert Led

People have preferences for acquiring information in different kinds of social situations.

Some people like to talk to their friends and family about what they see, read, or experience. People who like to talk in their groups will appreciate an exhibition atmosphere where they do not have to whisper or worry about disturbing other visitors when they talk out loud. Labels that are easy to read and sound good when read out loud will help promote social interactions between adults and between children and adults. Interactive devices or phenomena that encourage dialogue and cooperation are appealing to visitors who like to learn in peer groups or casual family groups in which no one is playing "leader" or leadership is fluid and shared.

Other people prefer to have someone knowledgeable speak to them. Labels written in the voice of an expert will appeal to them. Questions such as, "What do you think about this?" will not be inviting. People who like to have a guided tour will appreciate having them offered at frequent and convenient times. If the exhibition's big idea is one that incorporates a variety of points of view, or does not claim authority on a topic, or leaves questions open-ended, this stance needs to be made clear to the audience.

Tour groups in exhibitions should not hog exhibits and spoil the experience for self-guiding visitors. Exhibit element spaces need to be large enough to allow a family group to interact together. Two chairs instead of one at a

computer station say, "Work together on this." In addition, both types of experiences should be timed so that visitors who come in social groups can split up, do their own thing, and regroup in a timely manner.

4. Active Participation or Vicarious Watching

Both of these preferences also relate to the concrete experiences offered in exhibitions but show variability in people's level of participation.

Some people like to do and participate, and hands-on interactive elements can appeal to a broad range of ages and abilities.

Others like to watch someone else try an activity or do a demonstration. Although they might not actively have their own hands on it, they can vicariously experience an interactive element by observing from a distance—over the shoulder of a user. Coming to a museum to watch other people whether or not you know them can be an important part of the experience.

Exhibitions can easily provide for both active and passive opportunities or situations, but interactive devices should not be the only opportunities to access interpretation of the exhibition's main themes. Although the people who use interactives are not a separate population from the people who read, there are some people who do not want to have to use an interactive device to understand what the point is. Good labels on interactives allow observer/readers to experience without touching.

For more about designing for participation, see Nina Simon's article (and others) in the Visitor-Generated Content and Design issue of *Exhibitionist*.[12]

5. Verbal and Nonverbal Stimuli

In art museums particularly, where nonverbal stimuli offer the dominant experience, there seems to be a dichotomy between people who like to read interpretive labels about the art and those who do not. Both art novices and experts have opinions for and against reading what someone else thinks. The degree to which visitors feel that information or interpretation helps or hinders their aesthetic response is an individual preference, but most art museum experts agree that *some* interpretive information is an essential part of having a *full* aesthetic experience.[13] As more art museums adopt a visitor-centered approach to exhibitions, there will be more interpretation in the permanent galleries and in temporary shows.

For a small but vocal portion of art museum visitors, labels are an imposition. If the interpretation is unexpectedly encountered or encountered in a way that feels forced, these visitors are likely to be annoyed. Some people think labels are visually intrusive and that the visual clutter makes an aesthetic experience impossible. But those who do not want *any* information are in the minority.

Others like finding out why a particular piece is in the museum, what makes it famous, what to notice, or why the artist created it, although they are sensitive to being talked down to or being told what to feel.

Orientation is important for all visitors and helps them make choices. If the art exhibition has a declared didactic purpose and uses obvious, legible labels, visitors can choose to bypass it. If they choose to visit, they are still free to use the labels, audio tour, or brochure, or not.

In most museums other than art museums, these verbal-nonverbal preferences are likely to coexist compatibly in most learners.

Some people like to read more than others, but more people will be motivated to read when the words help enhance their nonverbal concrete experiences; confirm their expectations, anticipations, and motivations; and connect with their prior knowledge and feelings.

Nonverbal communication through graphics (e.g., illustrations, icons, photographs) can reach people who do not want to rely on words. On the other hand, for readers, graphics can serve to reinforce and add new dimensions to verbal and concrete experiences. Changes in mood through lighting, color, texture, and sound can vary the nature of sensory experiences in nonverbal ways.

6. Concentration and Relaxation, Noisy or Quiet

Different people have different preferences and tolerance levels for the ambience of exhibition spaces.

Some people need areas of rest or contemplation to alternate with, or be available in addition to, areas of high density of sensory and mental overload. Some people have trouble concentrating when there are competing sources of noise and distractions. For example, they find it difficult to read a label while a video is playing nearby.

Some people have no problem focusing on one thing amid a roomful of activity.

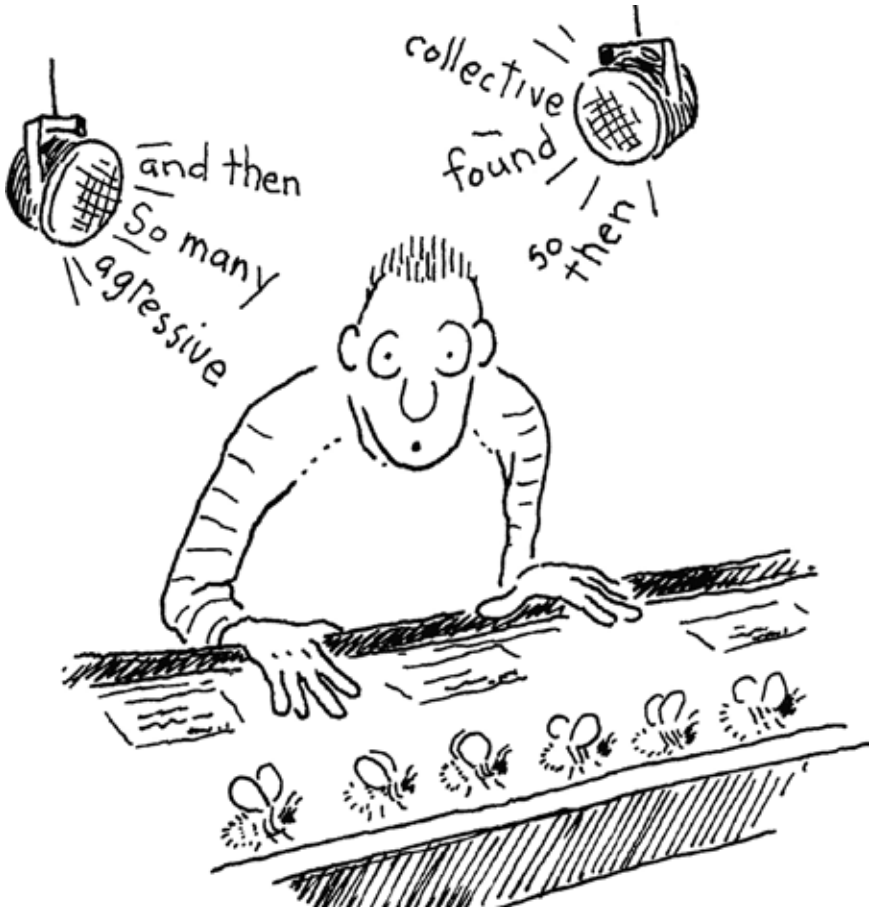


FIGURE 5.2
Many people find it difficult to look, read, and listen at the same time. Good exhibits keep these activities from interfering with each other.

Exhibitions that space elements far enough apart to allow for some separation of activities, while still maintaining an overall lively atmosphere, will not drive the first type crazy and not bother the second type.

EXHIBITS DON'T "CONTROL" VISITORS

The question of whether exhibits are "controlling" visitors or offering "open-ended" experiences often comes up in discussions with museum practitioners, with heated debates for and against. Some museum staff (especially in science

centers) believe that exhibits with one sequence–one outcome (e.g., push a button and watch something happen) are stilted and contrived. They argue for more open-ended exhibits with multiple possible outcomes, and they are against being limited by stating narrow objectives for visitors. Others believe that exhibits with no stated or apparent purpose are confusing to visitors, that such exhibits are educationally irresponsible, and that the museum has an obligation to be more explicit. These debates could be channeled more productively if we understood what each other meant. There needs to be a willingness to entertain the possibility, depending on the circumstances, that both positions can be right.

Regardless of which model of instructional design is used in museums—for example, structured sequences with single "discoveries" or activities with open-ended outcomes—exhibits do not "control" people. Self-selected, casual museum visitors have always been in charge of their own goals, used their own strategies, managed their own tasks and time, arrived at their own conclusions and integrations, and have not worried much about being extrinsically rewarded for learning or punished for failing to learn. Different kinds of exhibits encourage or discourage different aspects of this free-ranging behavior, and some visitors will feel more comfortable with one type of exhibit than another. It is the museum's responsibility to present all information and opportunities for experiences in ways that casual visitors can make sense of for themselves by choosing the ones they find attractive and spending whatever amount of time they want to.[14]

The type of approach and degree to which the presentations embody one form of instructional design or another should depend on what ideas are being communicated and what experiences are intended by the museum. Some ideas are best communicated by a linear sequence; others by multiple examples; others through open-ended experimentation; others through role-playing or mimicking; and some ideas are best expressed through media. The design of exhibitions and their labels should reflect the exhibit developer's intent, and the intent should be explicit: If it is meant to be open-ended, let visitors know; if it is appropriate to be pace-controlled or sequential, make that apparent.

Good exhibit design helps visitors control themselves. Attractive, effective orientation devices throughout the museum give visitors the information they need to make their choices: The interested visitors can find a topic they want; the disinterested are given sufficient information to avoid it. When visitors get to make deliberate, informed choices, they might get more than they expected, become more engaged, even stay longer.

Providing for and accommodating people's different motivations, learning styles, personality types, or intelligences are a good idea because they make exhibitions more appealing to a broad range of learners. In the final analysis, however, exhibit effectiveness and impact should be judged by the exhibit's performance, not its presentation of opportunities. The question, "How well did the exhibit communicate with visitors and engage them in finding meaning?" should be the driving force in the actual design process and the summative evaluation, not the more preliminary question, "How will we go about appealing to visitors' different learning styles?" Appealing to different learning styles is not a goal in itself but a means to the end of achieving effective communication.

We have considered many factors that can enable or discourage various styles, personalities, or intelligences to act. In most cases, the ways to appeal to different learning styles are not mutually exclusive within the whole exhibition context. If an essential exhibit message, however, is embodied in only one element that may have exclusionary appeal, such as a video or a panel of written text, that message will be lost on the person who chooses not to use that element. Therefore, it is important to make essential communication objectives available to visitors through a variety of modes and styles. As always, the first challenge is getting visitors to pay attention.

Models, theories, sobriquets, typologies, and segmentation of visitors' motivations and behaviors are useful, but they can give museum practitioners a false sense of security if they equate being informed of these visitor differences with being able to appeal to them successfully in a measureable way. To do that, we must thoroughly examine what is presented in the exhibition rather than who is coming in the door.

NOTES

1. I have written elsewhere about this in the Introduction to *What Research Says about Learning in Science Museums*, and "Learning Styles and Museum Visitors." But that was way back in the days when I still believed in visitor types, before I had done a lot of tracking and timing. For my revised viewpoint on styles, see "The Question of Visitor Styles" in VSA conference papers from 1994. For another person's way of looking at styles without stereotyping visitors in museums, see Otto Kroeger's "Exhibiting Our Differences," *Exhibitionist* 14, no. 1 (Spring 1995).

2. Howard Gardner, *Frames of Mind: The Theory of Multiple Intelligences* (New York: Basic Books, 2011).

3. Howard Gardner, "Multiple Intelligences: The First Thirty Years," *Howard Gardner*, 2011, accessed March 7, 2014, http://howardgardner01.files.wordpress.com/2012/06/intro-frames-of-mind_30-years.pdf.

4. John Falk, *Identity and the Museum Visitor Experience* (Walnut Creek: Left Coast Press, 2009).

5. Renate Meijer and Minnie Scott, "Tools to Understand: An Evaluation of the Interpretation Material used in Tate Modern's *Rothko* Exhibition," *Tate Papers* 11 (2009).

6. From a talk given by Matt Matcuk at the Chicago Museum Exhibitors Group on February 6, 2014, based on a study conducted by Slover Linnet Audience Research.

7. Andrew J. Pekarik, et al., "IPOP: A Theory of Experience Preference," *Curator: The Museum Journal* 57, no. 1 (2014): 5–27.

8. From a workshop given by Mark Rudzinski and Linda Wilson, "Segmentation Studies and Their Application" (workshop, Visitor Studies Conference, Albuquerque, New Mexico, August 2004).

9. J. Packer, "The Visitor Motivation Scale: An Instrument for Measuring the Relative Importance of Reasons for Visiting Educational Leisure Sites and Activities" (paper presentation, Visitor Studies Association Conference, Grand Rapids, Michigan, July 27, 2006).

10. "Visitor Experience Checklist Report" (unpublished report, Detroit Institute of Arts, 2013), 10.

11. Bernice McCarthy, *The 4MAT System: Teaching to Learning Styles with Right/Left Mode Techniques* (Barrington, IL: EXCEL, Inc., 1987).

12. Nina Simon, "Design for Participation," *Exhibitionist* 28, no. 2 (2009): 12–17.

13. The art museum issue of the "intrusion" of labels is discussed in *The Denver Art Museum Interpretive Project*, by McDermott-Lewis. See also *Insights: Museums, Visitors, Attitudes, Expectations: A Focus Group Experiment* by Duke and Walsh, and "What Visitors Want to Know: The Use of Front-End and Formative Evaluation in Determining Label Content in an Art Museum," by Lisa Mackinney.

14. D. N. Perkins, "What Constructivism Demands of the Learner," *Educational Technology* 31, no. 9 (1991).

6

Selecting the Right Reading Level

Writing clearly does not mean writing simplistically, but it does mean writing for people who are not experts in the subject.

All labels should strive to be appealing and suited to as many visitors as possible: the casual tourist, the layperson interested in the subject as a hobby, the person whose job is related, the family group visiting to entertain the children, the foreign guests with limited English, the new immigrant in the city.

Try this quiz: What is the best way to make sure you are writing at the right reading level for your audience?

A. Aim for the lowest common denominator
B. Use a sixth-grade vocabulary
C. Write different labels at different levels
D. Write for your peers
E. None of the above

The correct answer is "E," but before discussing some different alternatives, let's review the answers for A, B, C, and D and the misconceptions or difficulties presented by them.

A. Don't Aim for the Lowest Common Denominator.
There is no point in writing for the so-called lowest common denominator because they are the people who are unable or unwilling to read labels. Nor should you aim for the highest common denominator (experts only), or for the person who reads everything. Give the companions and families of those uncommon visitors a break ("Norbert, come on. The rest of us want to get going!").

Instead, select the content and style that will work for the *commonest* common denominator. Aim for the majority, appealing to the would-be readers: people who will read if the label is short enough, if it looks easy to read, if it is legible, and if they have time. Visitors are more likely to take the time to read if a label looks like it is written for them.

B. Don't Use a Sixth-Grade Vocabulary.
Sticking only to words that sixth-graders know will help make labels have a broad appeal, but it makes them less interesting, less colorful, and less interpretive than if that rule could be broken. It is all right to aim for a sixth-grade level, especially if your museum is only for sixth-graders, but do not be a slave to it. The basic idea is never to write for a twelfth-grade level, because that puts text out of reach for a large portion of the audience, especially younger children, non-English speakers, and viewers who don't have prior knowledge of the subject at hand.

C. Don't Write Different Labels at Different Levels.
Writing for different vocabulary or developmental levels—labels for kids, labels for adults—makes labels twice as hard to write and more expensive to produce, and it creates visual clutter in the exhibit. Most adult visitors, given a choice, will choose to read the kids' labels because they look easier, are shorter, and have larger print.[1] Keep it simple: Write one-level labels.

D. Don't Write for Your Peers.
The label writer who writes for her peers claims, "I'm writing for the more interested readers, and I don't care if people don't read them. Besides, it is our scholarly obligation to present these concepts." This attitude sends a counterproductive message to the majority of visitors: the labels are not meant for them, and the words are not important or essential to their experience in

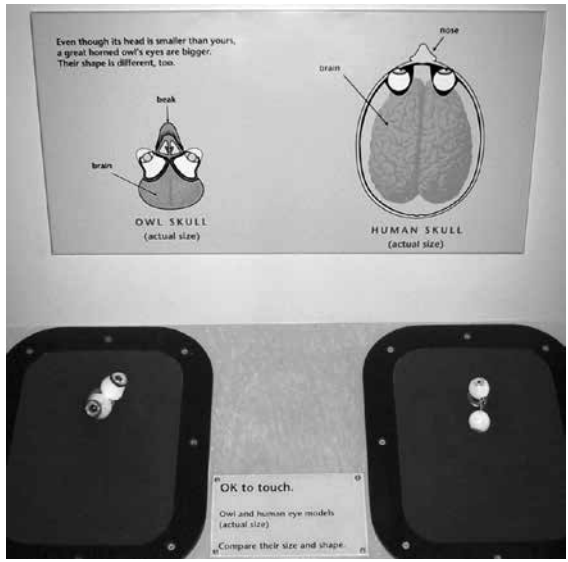


FIGURE 6.1
The label says, "Even though its head is smaller than yours, a great horned owl's eyes are bigger. Their shape is different too." This message in the *Animal Eyes* traveling exhibition is communicated in easy words, diagrams, and touchable models that are accessible to all.



FIGURE 6.2
A large panel, part of the dinosaur exhibition at the Natural History Museum of Los Angeles County, is easy to read and easy to share.

CASE STUDY

READING LEVEL RATIONALE

by Beth Redmond-Jones, Senior Director of Public Programs, San Diego Natural History Museum

Coast to Cactus in Southern California is a permanent exhibition at the San Diego Natural History Museum (theNat) that explores the unique habitats of Southern California from the coast to the mountains to the desert. All exhibitions produced by theNat are bilingual: English and Spanish. For this exhibition, we chose a fifth-grade reading level (ten to eleven year olds) for several reasons.

First, the museum's audience has a high percentage of intergenerational visitor groups, so the team knew we needed to write the text at a level that was accessible and easy to read by parents and grandparents, in addition to kids. We wanted the older generations to be able to answer children's questions and reinterpret the content using their own words as needed. This is especially important for those visitor groups with children in grades lower than fifth.

Secondly many of these family groups are on a bilingualism spectrum. Observation and research at theNat show that bilingual kids in the ten- to eleven-year age group jump back and forth between the English and Spanish as they are interacting with an exhibit component.[1] For parents who are non-English speakers, we found that adults are more likely to read the Spanish text before they engage with their kids, and by having it at a fifth-grade level, the text is more accessible to a wider audience. We now understand that families use the bilingual resources in a range of ways—all based on their particular group's needs and language preferences. In some groups, adults are most comfortable in Spanish; they use the Spanish labels to engage and guide their children. In other groups where an adult spoke Spanish and some English, he or she might use primarily Spanish labels, but occasionally English ones. Children might read mostly English labels, but during

the course of their time at the exhibition they might also use Spanish labels as well.[2]

Another factor that played into the museum's decision was my previous experience with the traveling exhibition *Animal Eyes.*[3] The language evaluation that was conducted for that exhibition gave a good framework and understanding of a ten-year-old's vocabulary level. The formative evaluation of labels for *Coast to Cactus*, as with *Animal Eyes*, identified that visitors ten years old (and older, both English and Spanish speakers) knew the concepts being presented but could not necessarily read the vocabulary word that defined that concept, so the team focused on teaching the concept rather than teaching the vocabulary word.

And finally, a fifth-grade reading level was a logical level to write to because fifth-grade science education standards in California focus on specific topics that directly align with content presented in *Coast to Cactus.*

Notes

1. For more information about these interactions, see Dr. Nancy Renner's Ph.D. dissertation, *Free to Explore a Museum—Embodied Inquiry and Multimodal Expression of Meaning* [2013].
2. *Bilingual Exhibit Research Initiative: Institutional and Intergenerational Experiences with Bilingual Exhibitions* [2013], 68.
3. The author was the Co-PI on this National Science Foundation–funded traveling exhibition.

the exhibit. Exhibits displaying this attitude cannot be called visitor centered. Institutions that keep label writers on their staffs who have this attitude are not sincere about seeking to reach a broader audience.

CHILDREN'S MUSEUMS ARE A SPECIAL CASE

Labels for children's exhibitions should be crafted for their developmental levels, not a watered-down childish version of an adult label. They should

stick to vocabulary words that are familiar to children, especially avoiding geographical proper nouns and words related to geologic time. Children exist in the here and now and have a poor sense of extended time (past and future) and of world space (far away is down the block). If children's museums want to fully realize their goals for their primary target audience, they should not attempt to write for adults. Children will read labels written for children. Adults also will often choose to read labels directed at children, because they know the labels will be easier to read and understand than most other museum labels. Adults can read these labels aloud to pre-readers, especially when the language is accessible to that younger age group.

The text (from left to right) on the reading rail in Figure 6.3 says:

> These two objects are similar, but there are
> lots of differences. How are they different?



FIGURE 6.3
In an exhibit at the Brooklyn Children's Museum, the labels were written to be read aloud by adults and to invite families to make comparisons among objects.

Masks from Guatemala
Easy to see the differences

These three objects are similar. If you
look closely you can see differences.
What is different about each one?

Akuaba dolls from Ghana
Harder to see the differences

These four objects are similar. If you look
closely you can see individual differences.
What is different about each one?

Wicker rattles from Zaire
Hardest to see the differences

Other good examples of writing for children and families can be found in "Write and Design with the Family in Mind" by Judy Rand.[2]

THE BEST GUIDELINES FOR SELECTING VOCABULARY LEVELS

So what is the right reading level? There is no single right level, but a good guideline is not to write below a sixth-grade level or above the eighth-grade level. Beyond that rule of thumb, here are three other ideas:

1. Test Your Text

Many computer word-processing programs have built-in tests for analyzing text. You can check the reading level occasionally as you write, to stay on track. Microsoft Word, for instance, does a grammar check that tells the average number of words per sentence, the percentage of passive sentences, and text grade-level analysis by the Flesch-Kincaid formula. Coleman-Liau and the Bormuth Index are other formulas that provide readability statistics. At the time of this writing, neither Google Docs and nor Apple's Pages word-processing programs provide readability statistics. If your word-processing program isn't equipped with a readability test, there are many readability calculators available on the Internet.[3]

But there are other ways than using rigid reading-level formulas to guide your use of colorful, descriptive language and still make labels comprehen-



FIGURE 6.4
What to do and notice is clear from the title, subtitle, and diagrams in the *Plant Lab* at the Huntington Conservatory.

sible for children and novice adults. Two of these are using front-end evaluation and editing for "core" meaning.

2. Use Front-End Evaluation

After drafting a good plan, objectives, and a big idea, but before writing labels or fully developing all the exhibition components, do a simple front-end evaluation with a small, representative sample of potential visitors (twenty to twenty-five people). Read the exhibition concept, title, or key ideas to them and ask, "What would you expect to see, do, and find out about in this exhibit?" Or show them (one at a time) the technical words associated with the exhibit concept and ask, "What do you think of when you see this word?"

Common sense and relatively quick, open-ended evaluations can give you qualitative feedback from visitors about what vocabulary, experience, and expectations they have with your planned exhibition. Front-end studies often come to the same conclusion: While visitors may be superficially

familiar with many of the terms, they do not have thorough understanding of what they mean. The implications for this are that exhibit developers can use familiar technical terms in labels, but they must not assume that visitors will understand them well. This underscores the need for labels to be written clearly and simply for readers who do not have sophisticated knowledge of the subject, whether it is microbiology, French impressionism, or the Civil War. Visitors may know the words *germ*, *Monet*, and *Yankee*, but they probably have limited and fragmentary knowledge about them.

3. Do "Core" Editing

An editing technique that can help make reading levels broadly based is to review the text and cross out words that are above a fifth- or sixth-grade vocabulary. See if the sentences still make sense without those words. In label-writing workshops I have sometimes told the story of the first label I remember reading. While riding in the car with my parents, we passed a sign on a lawn in front of a house that had three words. I could read the first and the last words: "Free xxxxxxx kittens." The middle word, *Persian*, was not in my vocabulary. That word certainly added to the meaning of the sign for someone who could understand it. But it did not interfere with my comprehension and subsequent request: "Can we stop the car?" (We did.)

Higher-level vocabulary words that are used as adjectives, not nouns, will add more information to a label without obscuring its core meaning. For example:

> The ~~anti-malarial~~ drug comes from the bark of a ~~tropical~~ tree.
>
> These ~~ritual~~ bowls were made from exotic materials like copper and ~~marine~~ shells.
>
> The sea star uses its ~~hydraulic~~ tube feet to open a clam.

Are the sentences still clear with the words crossed out? In these cases, yes: The drug comes from the bark of a tree. These bowls were made from materials like copper and shells. The sea star uses its tube feet to open a clam. These labels are certainly more informative with the additional words, but they still make sense without them to readers with unsophisticated vocabularies. If the label is clear with the words crossed out, leave them in. If it does not continue

to make sense, as in the next example, consider dropping those words, defining them, or rewriting.

> The ~~alleged perpetrators~~ of the Chicago Fire look ~~sublimely~~ innocent in Norman Rockwell's *Mrs. Catherine O'Leary Milking Daisy* painted during the 1930s.
>
> —original version does not make sense without the crossed-out words

> Mrs. O'Leary and her cow, who ~~allegedly~~ started the Chicago Fire, look ~~sublimely~~ innocent in Norman Rockwell's painting *Mrs. Catherine O'Leary Milking Daisy* from the 1930s.
>
> —edited version still makes sense without the crossed-out words

Another type of core editing is to eliminate words that are used interchangeably as nouns, verbs, or adjectives. Images created in the reader's mind by words should match what they see, so using the right words is important. Readability and comprehension can be slowed or impeded by words with more than one function and meaning, such as:

cement

project

concrete

fly

minute

envelope

scales

This goes for spoken words in audio labels as well. Words that sound the same should be avoided, such as:

maze	maize
coarse	course

paws	pause
sales	sails

Good editing eliminates these trickster words.

Appropriate reading levels are best governed by guidelines that are based on the assumption that the majority of the people want to read but are not conversant in the vocabulary of the subject, regardless of age. Typically, visitors to the Victoria & Albert Museum are highly educated. But the museum's text-writing guidelines remind writers that "they are unlikely to be educated in the subject you are writing about. 74% have no specialist knowledge of art and design. If they do have a specialist area, it might be in Renaissance book production not Buddhist sculpture."[4] Visitors who are experts are not the target audience for the label copy, and experts (unless they are really snobs) will not be insulted by clear, concise labels that are written with enthusiasm for the subject and a respect for novice visitors.

There are other considerations to keep in mind about reading level when visitors' reading ability is in another language. This raises the issue of bilingual and multilingual labels, dealt with in chapter 8.

NOTES

1. Stephen Bitgood, et al. *Effects of Label Characteristics on Visitor Behavior*, Technical Report No. 86-55 (Jacksonville, AL: Jacksonville State University, Psychology Institute, 1986).

2. Judy Rand, "Write and Design with the Family in Mind," in *Connecting Kids to History with Museum Exhibitions*, ed. D. Lynn McRainey and John Russick (Walnut Creek, CA: Left Coast Press, 2010), 257–84.

3. There are many readability sites on the Internet, including Readibility-Score.com and read-able.com. Because of the ephemeral nature of things digital, these websites may not live as long as this book. But you're sure to find a site to test your text by searching for "readability calculator."

4. Lucy Trench, "Gallery Text at the V&A: A Ten Point Guide," *Victoria & Albert Museum*, 2009, accessed July 22, 2014, http://www.vam.ac.uk/__data/assets/pdf_file/0005/177089/10808_file.pdf.

7

The Number of Words

It is a museum exhibition, not an encyclopedia, not a library, and visitors should be allowed to feel they are there primarily to look and do, not to read. Write shorter labels.

In chapter 3 we suggested how many words should be on different types of labels. This chapter considers the number of words in a whole exhibition. How much text can there be before visitors get overwhelmed?

HYPOTHETICALLY SPEAKING, BASED ON RESEARCH

Research shows that an average reading speed for adult visitors, who speak the language, who are on their feet, with many distractions, is about 250 words per minute. If the exhibition space is about two thousand square feet, and visitors spend a typically short time (between six and ten minutes, average for an exhibition of that size), that is enough time to read 2,500 words—but only if they spend the whole time reading. If they spend half the time looking and half reading, that allows for about 1,250 words. If they spend three-quarters of the time looking, talking to the other people in their group, and sitting down to rest briefly, that leaves enough time for about 625 words.

What kind of experience is the exhibit developer trying to create? If the two-thousand-square-foot exhibition space contains twenty different things to look at or do, and each one has a label containing only the most relevant

information (i.e., related to the context, big idea, design), and the exhibit planners hope that most visitors will read the labels and use the information to enhance their experiences with the objects or phenomena, then the average number of words per label should be about twenty-five to thirty (e.g., twenty exhibit elements with thirty words each = 600 words). Not many, but it is a realistic way to think about it. Think of a tweet as a benchmark: twenty-six words. The length of a tweet is a new standard of what people read readily and quickly, in two to five seconds.

Research has shown that there is a positive correlation between the amount of time visitors spend and the number of different things they do in an exhibition.[1] This means that there is a tendency for longer-time visitors to spend their time doing more things, not doing a few things in greater depth. Overall, when they linger longer, they stop at more of the available materials; that is, 70 percent of the exhibit elements, instead of only 30 percent. The time that it would take to read all the words in a single exhibition should probably not exceed some humanly reasonable possibility, such as one or two hours rather than six or ten hours. The argument that more reading opportunities will make more visitors come back more often is based on wishful thinking, not reality.

When a caption or group label has more than two hundred words, in several paragraphs, visitors may appear to be reading that long label as they scan it, looking for the most interesting pieces—most likely the interpretations relevant to the objects nearby. If the number of words in such a label is cut down to include only those relevant, visually based bits of information, the overall result is that more people will be able to find what they are looking for quickly and easily. You'll be giving them a reward for reading the label. When each label gives them satisfaction, enjoyment, and intrinsic rewards, they will linger longer. They will be thinking, "I'm hungry, my feet hurt, and the parking meter is about to run out, but I want to look at and read just a couple more things in here."

ACTUALLY SPEAKING: A SUCCESS STORY

At Shedd Aquarium, a temporary exhibit about wildlife forensic science was planned for the 2,300-square-foot special gallery. Concerned that their visitors might not want to spend much time in a science exhibit that contained no live animals, the exhibit developers were very conservative about the number of words planned for each label in the exhibit. The first part of the

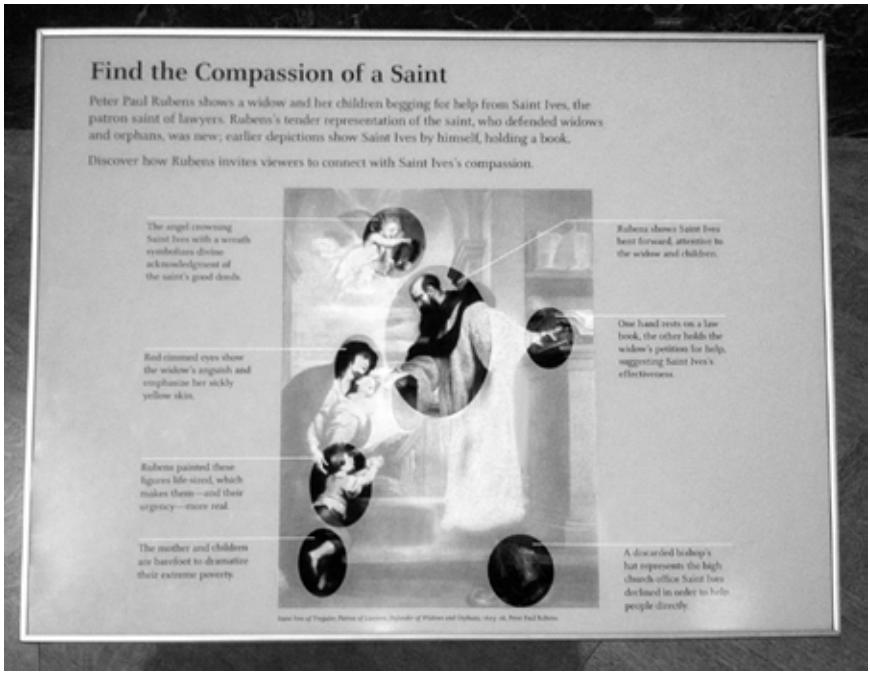


FIGURE 7.1
Each chunk of type in this extended interpretive label at the Detroit Institute of Arts has no more than twenty words—interpretive tweets that directly relate to the image on display. (See Figure 3.5 for another view of this label.)

exhibition contained artifacts and photographs, and the second section had ten interactive stations.

At each of the ten interactive stations, all label copy was written in chunks of fewer than thirty-five words, and the ordering of the information was kept consistent among seven different parts: (1) title; (2) introductory scenario; (3) "what forensic scientists know"; (4) directions for what to do and notice (usually in fewer than twenty words); (5) a question for visitors to answer by comparing two specimens; and (6) the answer under the flap, plus (7) a sentence about a consequence or result based on the introductory scenario. Each chunk could be read and understood independently of the others, and they could be read in any order.



FIGURE 7.2
A flip label in an exhibition about forensic science at Shedd Aquarium tells visitors what to do in eight words, and asks a question in eight words. The answer underneath is short, too.

All of the interactive stations were mocked up and tried out with nonexpert adults and were revised before the final versions were produced. Some were more difficult for visitors than others, depending on the type of forensic test being demonstrated. For example, the morphological characteristics of a feather are easier to see and compare than antibody gel plate tests. In response to visitors' obvious struggles, some copy was edited several times by cutting down the number of words, clarifying concepts, simplifying the messages, and eliminating confusing terms.

The total number of words for the ten interactive stations was about 1,300. The texts, which had been targeted for and tested with novice adults, turned out to be accessible to children as well. Ten-year-old children were observed

reading labels by themselves, and adults found it easy to read labels verbatim out loud to younger children.

Summative evaluations showed that adults and children spent most of their time using the interactives, reading thoroughly, following directions, congratulating themselves and each other when they knew the answer, reading again or looking harder when they did not, using more than half of the stations, and calling to each other, "Come over here, look at this one!"

The level of visitors' interaction and involvement in this science exhibit surprised and pleased the exhibit developers, and they felt that the characteristics of the label copy, particularly the brevity and revisions through evaluation, contributed greatly to its success.

MAKE THEM SHORTER

Studies have shown that shorter labels increase visitors' reading behavior.[2] Of all the opinionated, prescriptive advice there is about label writing, this is one



FIGURE 7.3
Reading rails, like this one at the Utah Museum of Natural History, can break copy into smaller chunks, spread it out, and mix it with graphics, technology, and touchables.

CASE STUDY

LESS WAS MORE

by Beverly Serrell

The exhibition, *Whodunit? The Science of Solving Crime*, was developed by the Fort Worth Museum of Science and History. A multidisciplinary team included museum educators, designers, curators, evaluation specialists, and marketers, plus a cadre of advisors—scientists, school-based educators, and forensic experts. Visitors examined a "crime scene," looked for evidence, and tracked down suspects. The exhibition was funded by the museum's first grant from the National Science Foundation in an era before visitor research and evaluation were fully mandated, but the museum took a visitor-centered approach to development by using visitor feedback at several points in the process.

Among the lessons learned during development was to keep it simple. At an early design stage, they had seven suspects with different leads, four computers, and fourteen monitors. They pared that down to three suspects, one computer, and four monitors. Prototyping was done during the design phase, and after opening they continued to revise and improve the visitor experience. *Whodunit?* was cited as one of the noteworthy and exemplary science exhibitions in the book *Are We There Yet? Conversations about Best Practices in Science Exhibition Development* by Kathleen McLean and Catherine McEver.

Summative evaluation was conducted for *Whodunit?* in Fort Worth, before the exhibit traveled, when there were forty exhibit elements in the six-thousand-square-foot exhibition. The tracking-and-timing studies showed that visitors were spending, on average, about eighteen minutes and stopping at about 25 percent of the exhibits. While the exhibit was well received by visitors and colleagues, the FWMSH staff thought that perhaps even more paring down would make an even better experience

for visitors when it went on the road to other museums. Exhibit elements that had failed to attract much visitor attention and that were deemed to be not essential to communicating the big idea were deleted. Several of them were wall text panels containing ancillary stories.

The smaller, traveling version of *Whodunit?* was 4,500 square feet (down from 6,000), and had 25 elements (down from 40). Evaluated again in a new setting, the average time spent by visitors was now 25 minutes (up from 18), and 60 percent of the visitors stopped at more than half of the exhibit elements, making it an "exceptionally thoroughly used" exhibition according to the database of tracking studies. The smaller version attracted more attention to fewer elements. Less was more!

issue where we do have the studies to show that shorter labels work better for more people. More text might please directors, donors, funders, founders, or curators who think that more is better, but *they* are not the primary users of the exhibition.

When I talked to Judy Rand, label writer extraordinaire, about the second edition for *Exhibit Labels*, she said, "Tell them to write shorter labels." When I looked back at the recommended types and word counts in the first edition, I was surprised at how many words were suggested: three hundred words for an introductory label? Oh no.

Research has shown repeatedly that visitors often, and in particular, skip the introductory label. But this label does hold important information: This text sets the stage; it explains the logic of the arrangement of objects in the space; it provides context for the viewer's experience. Then why do people skip them? Because the type is too small? Because they are written for experts? Because at three hundred or more words, they look too long.

After the Detroit Institute of Arts renovated its building and reinterpreted all of the permanent galleries, adding visitor-friendly label copy, interactive devices, and big ideas for all of the collections, the museum staff at the Institute found that evaluations revealed less use of introductory labels, such

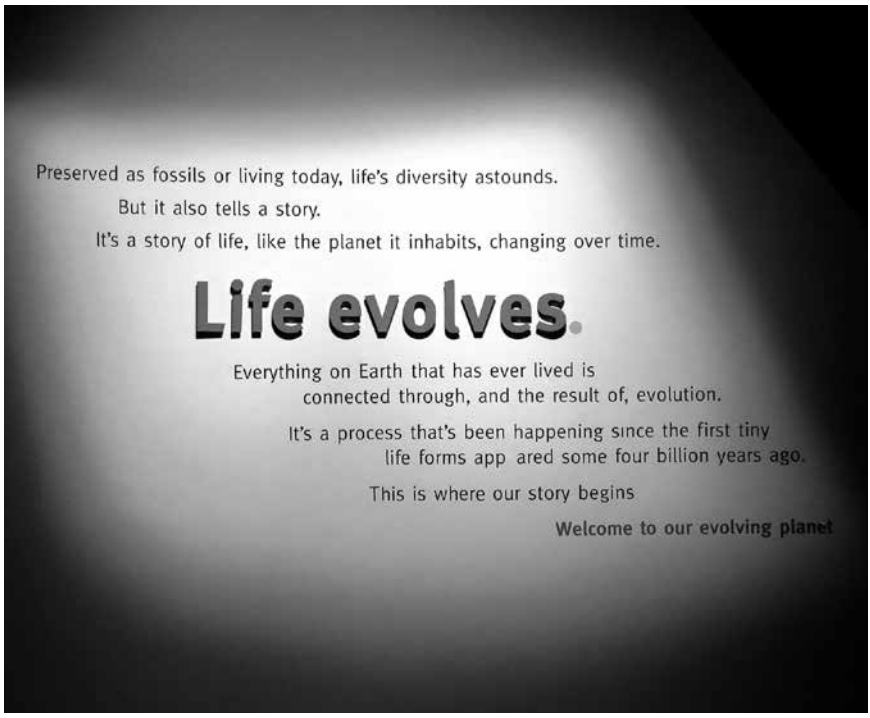


FIGURE 7.4
The layout of this title label at the Field Museum makes it easy to grasp the ideas without stopping, because the words are almost more impressionistic than literal.

as section or gallery panels, than they had hoped for. For future introductory labels the DIA recommended making them much shorter and making the size of the type larger so that visitors could read them easily at a glance and from a distance.[3] On the other hand, for the object labels with highly attractive works—places where tracking studies had shown that lots of people stopped—the recommendation was for *more* text. The evaluator's recommendation was to experiment with expanded forms of object labels at works of art that attract the most attention.

So, make most of the labels shorter, except occasionally where there is evidence that many people (not just one, not just the "more interested viewer," but an objectively documented large proportion of visitors) are paying attention to an object—those things that are attracting the most eyeballs ready and eager to read. But still, keep those paragraphs short, like tweets.



FIGURE 7.5
The maternity figure's label has a single seven-line paragraph with two sentences and a total of forty words. Could such a compelling object afford more words?

NOTES

1. This tendency applies to the way visitors spend time and use interpretive exhibitions and may not apply to nonthematic groups of exhibits, or whole-museum visits. See Serrell, *Paying Attention*.

2. Empirical studies have repeatedly verified this. See the special issue on the review of the literature on label research in Stephen Bitgood, ed., *Visitor Behavior* 4 (1989).

3. Detroit Institute of Arts, "2013 Summative Evaluation Tracking and Timing Report, Parts 1–7" (unpublished report, Detroit Institute of Arts, 2013).

8

Multilingual Labels

Multilingual labels help a museum reach out to and welcome the diversity of its visitors. But they are not easy, quick, or cheap to produce.

In many communities in the United States, multilingual labels have become an important, even necessary factor in addressing a multicultural population. Multilingual labels provide critical translation for non-English-speaking visitors. They also make these visitors feel welcome and more comfortable and help them create an affinity with the institution.[1]

The Bilingual Exhibits Research Initiative found that providing labels in Spanish and English languages helped Spanish-only adults facilitate museum visits for their children, provide instructions, keep up with the group, and feel empowered in an exhibition. In addition, multilingual speakers engaged in "rich forms of language-based interactions" in both languages, going back and forth between Spanish and English to create "a linguistically dynamic social experience."[2]

Multilingual labels should not be considered casually, because they add twice (or three times) the number of words to an exhibition. Multilingual labels are also costly to write, design, and produce. They can more than double the lead time needed for developing an exhibition. "If you plan to use bilingual interpretation, start early in the planning process. It can save time and money," says Yolanda Monteza, graphic designer at the Frost Science Center in Miami.

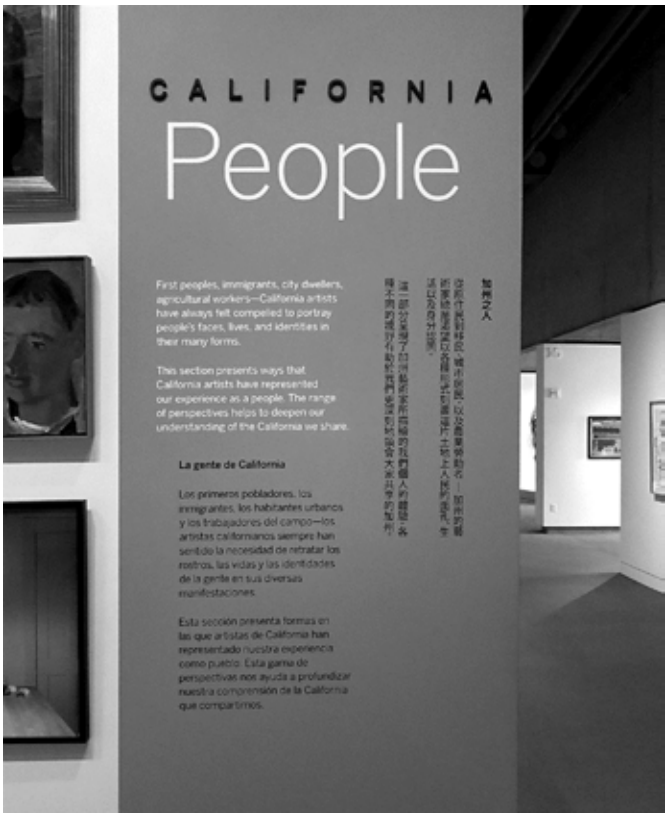


FIGURE 8.1
English, Spanish, and Chinese share space on a section panel at Oakland Museum of California, in the Gallery of California Art.

PLANNING FOR BILINGUAL OR MULTILINGUAL LABELS

Creating multiple sets of labels in multiple languages is most warranted when a large proportion of the local audience speaks a language or languages different than the local tongue, or certainly when it is the law as in parts of Canada. If there are significant numbers of visitors representing several different languages, multilingual signs may not suffice, and other forms of translation should be offered. There are several alternate ways to provide interpretation without multiple complete sets of labels on view. Laminated, portable, reusable labels can provide two or more languages, as can free

handouts, brochures, or audio tours. Museums in large urban centers, or with heavy foreign tourism, make use of these devices routinely.

If two sets of labels on the wall are the only solution to meeting a need for bilingual labels, keep label copy short so that words do not dominate the exhibition. Two sets of long interpretive labels next to each other throughout the exhibition create an overwhelming amount of text in the environment.

To welcome local families of Mexican and Vietnamese descent, the Children's Discovery Museum of San Jose, California, translated English labels into Spanish and Vietnamese for the exhibit *Secrets of Circles*. Summative evaluation found that "support for multilingual labels was very strong, not just among speakers of Spanish or Vietnamese (who were extremely supportive), but also across the spectrum and cultures of Children's Discovery Museum visitors."[3]

There are digital options as well. At the Exploratorium, Spanish- and Mandarin-speaking visitors can check out an iPad equipped with a QR code reader, and use this to translate some (not all) exhibit labels. The Exploratorium provided translation for exhibits that it felt couldn't be fully understood without access to the label content.

The key is in the planning. Developers need to ask, "Who are we translating for? What are their needs? What should be translated?" It's a good idea to involve the users in answering these questions. In an exhibition about the Inuit people of Eastern Canada, consultations with the community found that they did not want or need to have much of the interpretive texts translated because older Inuit who spoke the language already knew about the objects and customs, and the younger generation spoke English. They were, however, very interested in having the Inuit names identified for places and people shown in photographs. On the other hand, the original Alaska Native people of the Anchorage area, the Dena'ina, wanted all of the texts in *Dena'inaq' Huch'ulyeshi: The Dena'ina Way of Living* translated to encourage the next generation to pay more attention to their language, which was almost lost and is being revived.

Another word of caution for museums before getting started with multilingual labels, especially if they have never used them before: Creating an institutional system or set of guidelines will take lots of time, because many

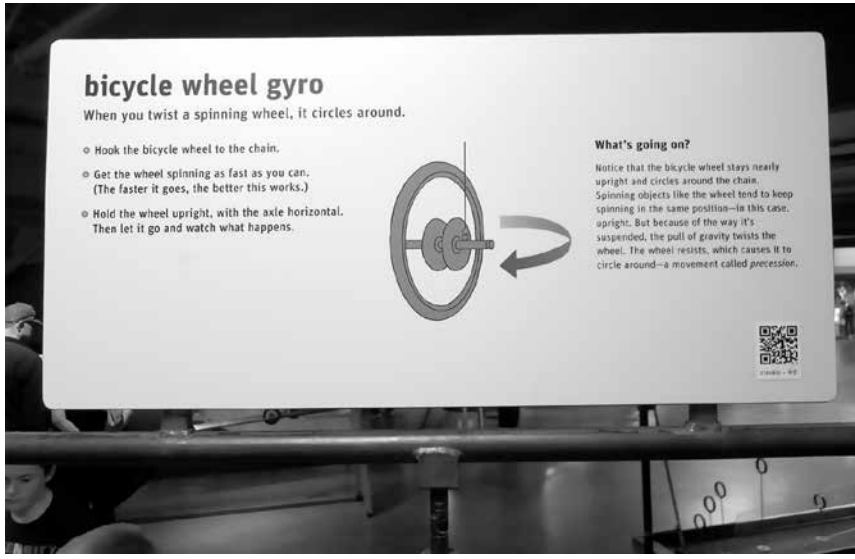


FIGURE 8.2
At the Exploratorium, a QR code on an interactive label takes you to translations for Spanish and Chinese.

people (e.g., museum staff, board of directors, community members) will have a stake in the decisions. "Allow three or four times as much time to accomplish this task as you might first estimate," is the advice of exhibition designer Merritt Price, who went through the process at the Art Gallery of Toronto.

THE TRANSLATING PROCESS

When translating labels from one language to another, it is best to use a translator who is completely fluent in both languages because interpretation involves subtle forms of communication that cannot be translated word for word, such as metaphors or colloquial expressions. The person who is translating must actually reinterpret the messages using the style and manner of the given language. And before being translated into multiple languages, the draft of the labels should already be edited carefully for appropriate reading levels and clarity of thought.

The Oakland Museum of California translated primary labels in its renovated art galleries into two languages: Spanish and Chinese. The museum's native-speaking community-based advisors helped choose the translation company most appropriate for the local audience. Once the translations were completed, the museum hired additional external reviewers to look over the translations. This added considerable time and expense to the process, but it was done to ensure that the translations were closest to the original meaning, and that they all had a consistent voice.[4]

At the Miami Museum of Science exhibit developer and bilingual communications specialist Carlos Plaza generated a cohesive policy of bilingual interpretation (English/Spanish). These were his guidelines:

- Write in the first language, then convey meaning, not literal translation, in the second language.
- Reformulate text in first language based on insights gained from interpreting the second language.
- Voice, tone, and style should be the same in both languages.
- Use universal terms whenever possible and most familiar regional variations when necessary.
- Create concise, digestible chunks of information.
- Determine word count based on visitor behavior, graphic design, and readability.
- Develop consistent size, arrangement, and aesthetics for all interpretive text.
- Give equal weight to both languages—font size, headlines, and others.
- Clearly separate the two languages.
- Be consistent with the placement of elements.
- Avoid repeating the same images on one panel.
- Test and modify as necessary.[5]

These guidelines have evolved and been modified as the museum has become more thoroughly committed to bilingual labels, and they continue to experiment with effective ways to write and produce them.



FIGURE 8.3
Labels in Spanish and English are printed with dark type against a white background for maximum legibility at the Miami Museum of Science.

THE DESIGN PROCESS FOR BILINGUAL LABELS

The Canadian Museum of History in Gatineau, Québec, has been working on the challenging issues of design and presentation of labels in French and English for years, and they have experimented with typefaces, colors, positions, sizes, and other features to ensure that languages are distinguishable and that one language is not privileged over the other. "Visitors scan the labels, looking for their language," says Jennifer Elliott, director, Public Research and Evaluation, "and we need to ensure that the text is always presented in such a way that visitors can find their language easily and consistently."

Distinguishing the Languages

Make the design (colors, typefaces) of the two sets readily different from each other to cue visitors quickly into the multilingual system, but be careful

CASE STUDY

LESSONS LEARNED FROM MULTILINGUAL AUDIENCES

Carlos Plaza, former Exhibit Developer, Miami Museum of Science

At the Miami Museum of Science *Heart Smart* was a one-thousand-square-foot multilingual exhibition and research project about heart health. Sixteen interactive components engaged visitors in the subject of heart health by inviting them to take simple personal measurements such as blood pressure, height, weight, waist size, and to self-report their health habits. The exhibit also informed visitors about the research process and invited them to contribute their health and demographic data—anonymously—to real-life research.

All of *Heart Smart*'s computer interactives were presented in English, Spanish, and Creole. The exhibit's interpretive panels were presented in English and Spanish. The Haitian Creole version of the interpretive panels was available as a twenty-four-page exhibit tour booklet that included all of the illustrations used on the panels. Over 60 percent of Miami's residents are of Hispanic origin. The Miami Museum of Science presents all of its exhibits in English and Spanish as part of its commitment to serve this large segment of the community. The purpose is not only to provide useful tools for interpretation but also to be culturally inclusive and welcoming.

Miami also has a relatively large Haitian community. Approximately 5 percent of Miami residents are of Haitian origin. With the support of a Recovery Act Administrative Supplement grant from NIH, the museum developed Haitian Creole interpretation materials and strategies. The Haitian Creole language was added to the computer interactives, and a booklet was created to provide the information and illustrations available on the English-Spanish interpretive panels. As the museum does not have a Haitian Creole writer on staff, a professional translation company was contracted to translate the English text.

One challenge of this project was for codevelopers—the university researchers—to adjust to the amount of time a visitor typically spends in science museum exhibitions. As content experts, they had planned for a large amount of interpretive text, but as exhibit development progressed and the realities of visitor behavior came to the fore, they realized that they would have to rely on the exhibit's lead developer to simplify the content and limit the word count. This is not only true of exhibits in general but also particularly of bilingual exhibits where text in two languages next to each other can give a passing visitor the perception of an insurmountable amount of information. In the end, the team developed nine large panels (30 in. x 84 in.) to cover the exhibition's main themes of nutrition, physical activity, stress management, and risk factors. Each panel had an average of 112 English words including title, body, captions, and tables. The Spanish text averaged a few more words.

For the exhibit developers, the precision of the interactive components proved a challenge. It was imperative that both visitors and researchers obtain accurate measurements. At the same time, the interactives needed to be completely autonomous and durable. The ultimate solution was an investment in high-technology equipment and to perform constant calibration and maintenance (two to three times per week).

Interviews with fifty-seven visitors showed that 21 percent of them made use of the Spanish-language text in the *Heart Smart* exhibition. The evidence suggests that visitors of Hispanic origin appreciated the multilingual signage.

An unexpected finding was that many Haitian-Creole speakers did not use the interactive exhibits to take their measurements despite entering their basic demographic data (age, gender, ethnicity) at the check-in. There are a total of sixteen data collection opportunities, including height, weight, heart rate, and quiz questions. Some 33 percent of Haitian-Creole users consented to have their personal measurements saved for research but did not actually use any of these exhibits. Perhaps more culturally relevant text—rather than just translated—and more relevant illustrations could have improved the quality of their visit.

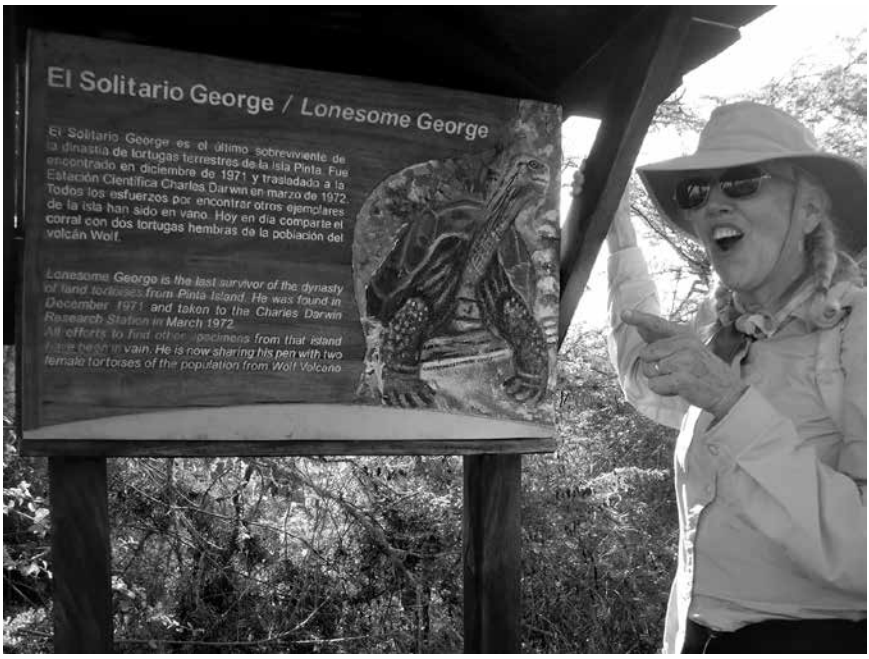


FIGURE 8.4
Bilingual labels may seem cumbersome until you are the one who doesn't speak the language. (When I saw *El Solitario George* at the Darwin Research Center in the Galapagos Islands in 2012, I appreciated the English translation.)

not to make one more legible than the other. The sizes should be the same. The choices of contrasting colors should be balanced equally, but the choices are limited because few colors have exactly the same contrast. Their placement together (right, left, top, bottom) has implications for importance and priority.

The Oakland Museum wanted to display three texts—English, Spanish, and Chinese—adjacent to one another, as opposed to one primary text with two secondary translations. The graphic designer put English at the top, giving it a "conventional firstness." The Chinese is set in vertical format and reads from right to left. The Spanish holds the central position, and its first line appears at eye level for the average visitor.[6] In regional or local ethnic museums, the most commonly spoken language will probably have priority.

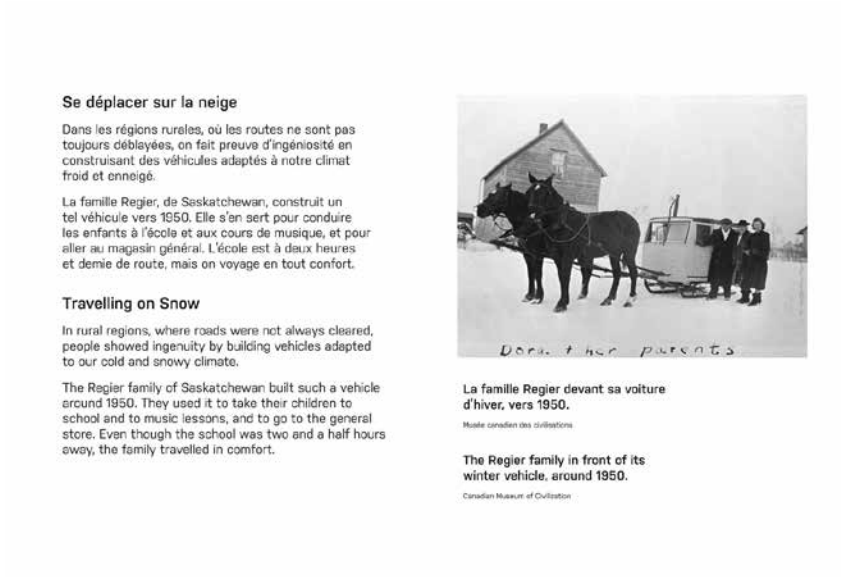


FIGURE 8.5
French and English texts have the same type size, typeface, and color on this label, part of an exhibition about snow at the Canadian Museum of History, which has been addressing the issues of bilingualism for many years.

For traveling exhibits, separate panels provided for each language can be rearranged to meet the needs of each venue. For example, in one location, the French panels could be placed to the left, English on the right; while in another location, the social/political climate might call for the reverse.

Another alternative is not to make multiple sets for every label, but to select only a few, based on the nature of the audience and the communication objectives for the exhibition, or for special occasions. For example, one zoo made labels in Spanish for a temporary interpretation of animals from Mexico and Central and South America. Another zoo put Swahili titles on buildings and services in the exhibition that featured animals from Africa. Besides using words, the addition of flags, graphic motifs, music, even food (smells), and other multiethnic elements can help create a mood or atmosphere appropriate for special and diverse audiences. It would be disrespectful, however, to use a second language simply as a decorative design motif.

In a primarily English-speaking community, another alternative to multilingual labels is to write label text in a way that people who speak English as a second language would be able to understand the basic ideas. The guidelines for selecting the appropriate reading level (chapter 6) apply here—test your text, use front-end evaluation, and do "core" editing—with extra consideration for visitors with limited vocabularies.

NOTES

1. Steven Yalowitz, Cecilia Garibay, Carlos Plaza, and Nan Renner, "Bilingual Exhibit Research Initiative: Institutional and Intergenerational Experiences with Multilingual Exhibitions" (report, NSF DRL #1265662, September 2013), http://informalscience.org/images/research/2013-10-01_BERI%20Research%20report%20Final%20Sep%202013.pdf.

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3. Allen & Associates, "Secrets of Circles Summative Evaluation Report" (report prepared for the Children's Discovery Museum of San Jose, October 2007).

4. Barbara Henry and Kathleen McLean, ed., *How Visitors Changed Our Museum* (Oakland, CA: Oakland Museum of California, 2010).

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6. Henry and McLean, *How Visitors Changed Our Museum*.

9

Writing Visitor-Friendly Labels

The overall goals for visitor-friendly labels are to appeal to a broad audience, to help visitors create positive experiences, and to be used by the majority of visitors.

Interpretive labels speak to visitors in an appealing voice—not preachy or pedantic, but not simplistic or condescending. They encourage visitors to start to read, to read aloud to others, to read all the way to the end, and to remember what they read. The best kind of interpretive labels will also be useful and meaningful to visitors.

Marlene Chambers, former editor and label writer extraordinaire at the Denver Art Museum, encourages us not just to write well, but to make messages useful to visitors.[1] She believes we must offer messages that give visitors something to do—such as agree with the ideas, disagree, use them as building blocks in making conclusions, or make discoveries of their own. She believes that most of the messages in museum labels, even friendly ones, are of no personal use and have no relevance to visitors' lives because they are one-way communications of information from curators to visitors. Her advice and philosophy resonate with the idea of open-ended interpretation and of exhibitions that not only encourage but actually present multiple meanings. This emphasis on usefulness and meaningfulness is a large part of our current efforts toward making museums more visitor centered.

I believe that a museum's goal of offering visitors important, interesting messages and the visitors' goals of creating personal meaning and enjoying themselves are not incompatible. It just takes more work, because museum practitioners first must find out what visitors know and want; then, figure out how to design and present what the museum has to offer in ways that will make useful sense to them; and finally, to evaluate all along the way to make sure that both sets of goals are achieved. This is not a quick or easy task. It helps if the desire to reach out to visitors is institutionwide.

SIXTEEN GUIDELINES

No book about exhibit labels can tell you *what* to say, because that depends on the museum, its collection, its mission, its visitors, and the exhibition's big idea. But we can identify guidelines for *how* to say it, and how to write more user-friendly labels. Whether it's the curator's opinion, the interpretive strategy team's skilled efforts, or a community's issue, the words on the walls will be more effective with the audience when they are created with these guidelines in mind.

1. Start with Information Directly Related to What Visitors Can See, Feel, Do, Smell, or Experience from Where They Are Standing.

You do not know the age, gender, race, or educational background of your reader, but you do know the exhibit's setting and context. You know what your visitors are looking at. Take full advantage of that fact: use words that are keyed to the most noticeable size, shape, color, position, content, question, or directions to get readers started. What will visitors be likely to notice or do first? Start with that.

2. Vary the Length of the Sentences.

The longest ones can be around twenty-five words; the shortest, two or three; the average, ten to fifteen words long. Sentences that are longer than thirty words make it difficult for visitors to follow the train of thought or keep track of the points. A variety of lengths will keep visitors from becoming bored and help them stay alert for the unexpected.

3. Use Short Paragraphs and Small Chunks, not Large Blocks of Information.

A common mistake in label writing is to put too many ideas into a single paragraph (a common problem when curators write too much and designers

have to fit it all in). Paragraphs serve to separate thoughts and give readers a brief rest between ideas or a chance to look at the thing being written about—actively using the information or judging the interpretation. Write so that visitors can read a little, look a moment, read a little more, look again—all in less than a minute.

Short paragraphs can be separated and announced with subheads. Subheads break up blocks of text and give a brief introduction to the next paragraph. Read together, subheads tell part of the story.

A paragraph longer than fifty to sixty words will look even longer on a wall label in large type than it does on a page of 8.5 x 11 draft text or in a book in small type. Labels that look too long discourage, overwhelm, and frustrate readers. How many visitors walk into a text-heavy exhibit and say, "Oh goody, look at all those neat words"?

4. Metaphors Are Better for Other Forms of Narrative, Not Labels.
Label readers must contend with far more distractions than do readers at home in the comfort and familiarity of their own easy chairs. Metaphors—in which one thing is likened to the properties of another—add other visual ideas to the already complex environment of an exhibition. Three-dimensional metaphors, on the other hand, can add intriguing visual richness. In an exhibit about the feeding habits of two different types of whales, the case contained a net and a toothed animal trap. The label described how one whale "sieves its food from the sea" and the other grasps at prey with their teeth. The visual metaphors were creative, clear, and fun to look at. This would be less effective if just words were used (e.g., "like a net" and "like an animal trap").

5. Alliteration Is an Easy Device to Use.
Alliteration is series of words starting with the same letter or sound. For example:

> Sea stars use suction to pry open their prey.
> Pulling on a shell for hours with its small
> hydraulic tube feet, a sea star will exhaust
> even the most clammed-up clam.
> —from an aquarium exhibit about sea stars

When editing, make sure alliteration is really necessary, not just a gimmick. It is easy to overuse this technique.

6. Haiku Is Like Cilantro.
Some people like it. Some really don't. Writing exhibit labels in haiku or other forms of poetry can put people off. In an exhibit about frogs that was interdisciplinary, containing real animals, objects, and art, the haiku labels were among the least used.[2] In most cases, clear writing is likely to be more attractive. If poetry is used, it should be relevant to the content of the exhibition (maybe haiku in a Japanese garden), it should be prototyped with visitors before installation, and it should not add visual clutter to a panel.

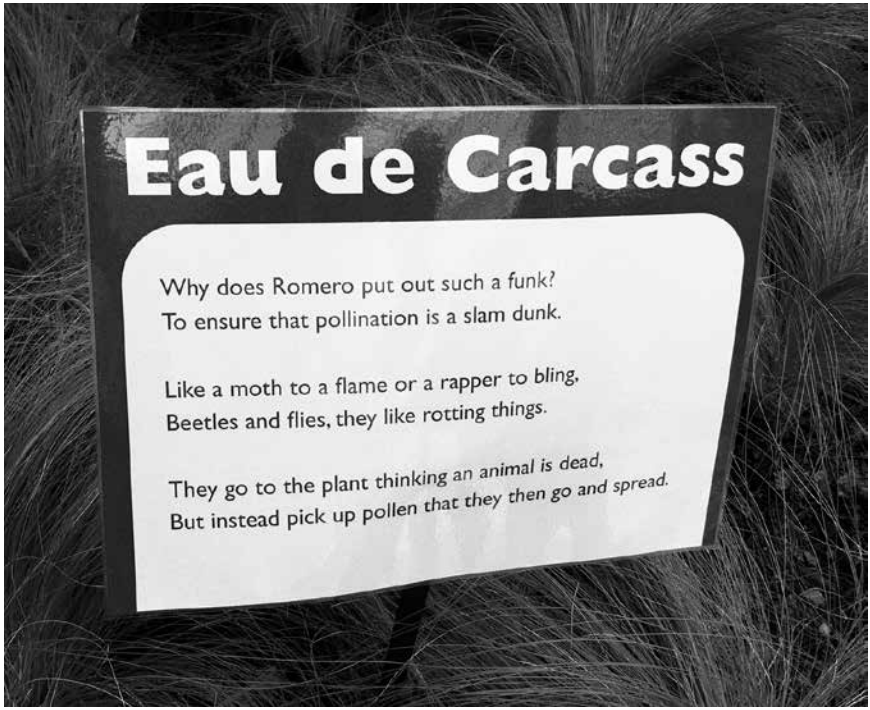


FIGURE 9.1
Playful poetry along the path that leads to the foul-smelling blooming plant "Romero" serves as an interpretive progression to the final experience at the Phipps Conservatory in Pittsburgh.

7. Exclamation Points in Labels Shout at Readers and Force Emphasis on Them.
Let visitors discover and exclaim on their own (e.g., "Look at that!" "That's neat!" "I never knew that!"). If you are tempted to use an exclamation point, think about what it adds to the label's voice. Some people find them overly forceful!

8. Humor Should Be Used Sparingly.
Humor is one aspect to label style that should definitely be tried out on a sample of visitors (in context, if possible) to make sure that what is supposed to be a joke really is. If visitors seem misled, or confused, or if they don't laugh, drop it. Humor is often an indulgence for the writer's benefit, not the reader's. Puns—if they do not interfere with readers who don't get them—are allowable, but with restraint. Humor is subjective, and it can be hard to find universal standards.

What percentage of the audience is likely to find these examples funny, too cute, or obscure?

Womb with a View
—from a panel on marsupial development at a zoo

The Wharf—Pier pressure is heavy
where animals compete for space.
—title and subtitle on a panel at an aquarium

Pixel this.
—on a science museum exhibit on digitizing

Go lightly on the use of metaphor, alliteration, poetry, exclamation points, and humor. While you might want to use these techniques of writing style to spice up your labels, they can also be distracting by overpowering the point you want to make. Use them sparingly.

9. Use Quotations When They Advance the Narrative and Are Necessary.
They can add color and another "voice" to the exhibition. Or just fill space. Unnecessary, irrelevant, or obscure quotes are worse than no quotes because

they will quickly teach your readers not to pay attention to them. The following are two examples of well-integrated quotes in a contemporary art exhibition at the Denver Art Museum:

> Jennifer Bartlett
> *Plaid House*, 1989
> Jennifer Bartlett explained how the museum building inspired this special commission: "I find plaid extremely eccentric. This piece relates strongly to the museum building. It's an extraordinary building, completely eccentric, and wonderful. I was concerned that they have a painting and sculpture that they could use anywhere in the building."
>
> *Plaid House* is a study of contrasts. It is painting and sculpture, singular and plural, mechanically precise and expressively freehand, serious in intent and humorous in appearance.

> Jean Dubuffet
> *Effigie Erratique*, 1972
>
> "Art should always make us laugh a little and frighten us a little, but never bore us." Following his own advice, Dubuffet transforms a familiar form of art—the dignified portrait bust—by modeling it roughly from an untraditional material, resin, and covering the surface with bold patterns derived from his ball-point pen doodles.
>
> Dubuffet despised bland, undemanding art. He found inspiration in the raw, direct painting of children and the mentally ill. Though he claimed that the most truthful art was anonymous, his distinctive style says "Dubuffet" more clearly than any signature.

10. Expect Visitors to Want to Read.
Assume interest. Make labels short enough that the majority of visitors will want to read them. Do not put information into the exhibit unless you expect it to be read. "Tertiary information" with technical and abstract details meant for a few visitors just adds clutter and confusion. What if a highly detailed label is the first label a person reads? Will visitors want to keep reading more, or will they think that all the labels will be like that?

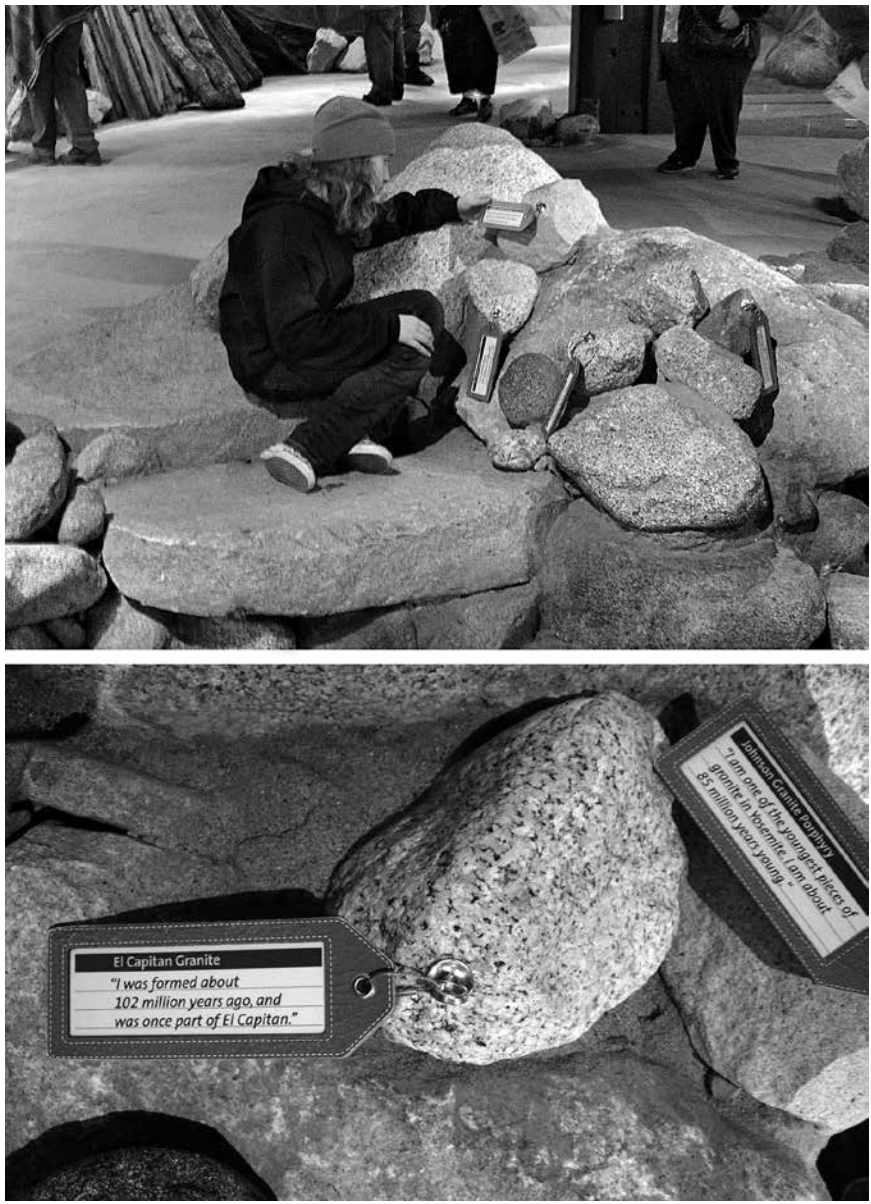


FIGURE 9.2
Talking rocks give voice to million-year-old granite at Yosemite.

11. Don't Justify Including Content for the "More Interested Reader." The assumption that visitors who are not interested in this level of information can just skip it is probably the most significant factor contributing to poor labeling in museums for the past century. Curious readers can find it difficult to "skip" text. And we know that the more words there are on the wall, the fewer visitors will read overall. As long as museum practitioners use that excuse for adding more words to labels, we will be stuck with too many labels, too much information, and information not used by or useful to the majority of visitors.

12. Use Informative Paragraph Titles and One or Two Heading Phrases. These stylistic devices help break up labels and introduce ideas quickly. They also help transitions between thoughts. Each title or subtitle must have meaning on its own, but together they should add up to a complete idea—the main idea of the panel.

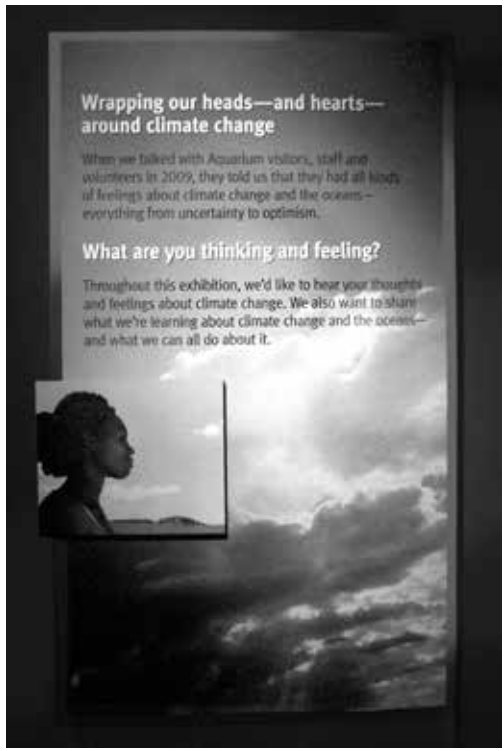


FIGURE 9.3
This label asks for visitors' thoughts and feelings about climate change. Dedicated to discussing environmental awareness with its audience, Monterey Bay Aquarium works to be visitor friendly while addressing important issues.

A common mistake when using multiple headers is to make titles and subtitles that are clever and catchy but that do not advance the narrative. Titles and subtitles should be submessages, not isolated, unrelated thought fragments.

13. Newspaper Journalism Is Not a Good Model.
It is a bad model because newspaper articles are written with the assumption that most readers will not read the whole thing. After the headline or subhead that communicates a short teaser or summary, the body of the article that follows has the most important information up front, then goes into more detail, often repeating information. The length of newspaper articles is often not dictated by need but by space available, and newspaper editors assume that their readers are sitting down. Labels, on the contrary, should be written to be read in total, all the way through to the snappy end. Labels are for standing, time-limited readers and should begin with an informative headline or subhead, follow with body copy that sparingly covers the essential information, and then stop. If there is more to say in detail for "the more interested readers," put it in a brochure or handout, if the cost can be justified.

14. Stay Flexible within the Label System.
Types of labels usually have recommended word lengths, but some flexibility should be allowed. Caption labels that all have the same number of words make for boring design and a dull writing style. Don't be afraid to leave some white space occasionally. Area labels that all contain two paragraphs of four to six lines each will be easy to design space for, but what if there is not two paragraphs' worth of something to say about each area? Catchy titles used on every label can be annoying and uninformative. Overusing question labels gets to be insulting.

15. Interrelate Labels and Their Settings.
Most of all, do not get locked into a system that does not allow label content and design to be responsive to the setting and context. Information on labels works best when it reflects, enhances, and echoes its environment/placement/setting as well as the objects on display. Labels that need their context in order to make sense are going to be more integrated with their setting. That is, label readers will get more out of the words, and more out of looking at the items



FIGURE 9.4
An outdoor interpretive panel on the Cincinnati Nature Center trail includes a push button that invites people to sing along with a song about the Pawpaw Patch.

in the exhibit, when the words are well integrated with the rest of the exhibit design. The words, the graphics, the objects, and the media all work together, like a 3D graphic novella.

16. Have a Snappy Ending.
Just as most of your visitors self-select to come to the exhibit in the first place, readers are making a choice when they pay attention to the words. Give them a reward for their effort, especially for reading it all. Rewards can be in the form of closure, reinforcement, or new insight. When finished, visitors should feel glad they took the time to read through to the end. This example interprets a community icon in an outdoor exhibit in the form of a quote:

> In 1847 this bell hung in the cupola of the congregational church. It was later used as the village fire alarm. It also sounded the 9 o'clock curfew when every

kid was off the streets or had a good excuse why he wasn't home. I know, I was one of those kids. *Les Schrader*

VISITOR-FRIENDLY LABELS FLOW FROM A VISITOR-ORIENTED INSTITUTION

Visitor-friendly style, in the overall analysis, means that museum practitioners have learned to put visitors first—respecting and valuing their concerns, wishes, desires, and perceptions. There are many sources for investigating this approach. In her "Visitor's Bill of Rights," museum exhibit developer and writer Judy Rand lists eleven important human needs seen from the visitor's point of view. They include comfort, orientation, welcome/belonging, enjoyment, socializing, respect, communication, learning, choice and control, challenge and confidence, and revitalization.[3] Rand's list and the framework presented by museum researcher and evaluator Deborah Perry in her book *What Makes Learning Fun?* share many ideas. Perry's framework has three complementary perspectives—motivations, engagements, outcomes—each of which is divided into four to six components describing ways to satisfy visitors' needs in exhibitions.[4] And Stephen Bitgood has put many of these ideas together into his attention-value model for understanding visitors in museums.[5]

Labels that are created by an institution that is committed to visitors' needs will sound and feel different from an institution where the communication of curatorial knowledge is still paramount. Can an institution adopt a visitor-friendly voice in its exhibits without dropping the curatorially driven agenda? Yes, but I don't recommend it. It will feel and sound condescending. Do the right thing and become a visitor-centered institution instead.

Five Characteristics of a Visitor-Friendly Institution

In a presentation at the 2014 AAM annual meeting with Swarupa Anila from the Detroit Institute of Arts, Swarupa and I identified five characteristics of a visitor-centered institution—an institution that puts its visitors first.

1. Top down. The vision and direction to be visitor friendly comes from the top, from the director to all departments.
2. Focus on a novice audience. The institution focuses on novices as their target audience—people without any special interest, knowledge, or training in the museum's subject area.

3. Dispersed opportunities. Visitor-friendly interpretive strategies are dispersed throughout the permanent collection, not reserved for a separate "discovery" area.
4. Meaningful experiences. Evaluation is conducted to understand visitors' experiences in their own words, using open-ended questions and analysis driven by the museum's mission to help visitors find personal meaning.
5. Iterative and reflective. The approaches that serve decision making are iterative and reflective, from planning to development to evaluation. Staff members ask themselves: Is it working? Are we doing what we said we'd do?

When label writers indulge themselves with catchy phrases and clever style, or curators indulge themselves in more, more, more words on the wall, or designers indulge themselves in award-winning new graphic styles or personal favorites, they are not being visitor friendly. The whole exhibit team must agree and care about what the primary impact on the visitors will be and carry out that intent in all aspects of the planning and design. This is the essence of "intentional design." Being visitor friendly means affording visitors' experiences and their participation more than communicating new knowledge. Remember, it's about inspiration, not information.

Four Visitor-Friendly Museums

When a museum makes an institutionwide commitment to be visitor friendly, the results can be dramatic, and the impacts can be felt at many levels—personal (individual visitors), social (groups of people), political, and economic—through increased public support for the institution. These four are among the growing ranks of museums that are making the change.

Oakland Museum of California

In redesigning its art galleries, the Oakland Museum of California wanted to invite "a wider range of diverse visitors" into a "conversation about art" with both the artists who created the art and the curators who selected it.[6] Labels would make visitors feel welcome and help them make their own meaning in the art galleries, rather than serving up art-historical information aimed at a "correct" understanding or experience. A full year before the gallery opened, the new labels were tested with visitors. And although curators had written content in generally accessible language, the text was still

confusing to visitors. Community advisory councils were called in, and staff held a roundtable discussion called "Conversations about Language." These consultations helped OMCA incorporate language that was welcoming, that encouraged visitors to value their own responses, and that portrayed artists as human beings. Summative evaluation found that the labels "helped visitors feel as if they were a part of a dialog about art—rather than just a passive viewer and recipient of content."

Detroit Institute of Arts

Six years before the Detroit Institute of Arts (DIA) reopened its museum with a completely reinstalled collection, the new director, Graham Beal, asked the question, "How can visitor studies help us become more visitor centered?"[7] The goal was to become more accessible to more types of people, including those who were not drawn to or who felt excluded by the DIA. The approach was through extensive visitor research. The new director reorganized the institution into multidisciplinary teams composed of curators,



FIGURE 9.5
Draw yourself at the station, then see your digital art on the portrait wall at the Oakland Museum of California.

CASE STUDY

DRAW YOURSELF

by Karen G. Nelson, Museum Education Consultant

The *You Are Here* digital interactive at the Oakland Museum's Gallery of California Art allows visitors to look at themselves in a mirror and then draw a self-portrait with their finger on a digital tablet. Their drawings are then displayed on a framed digital screen on the adjacent wall, amid a collection of over twenty portraits by California artists. Visitors can also review a digital library of other people's drawings. *You Are Here* is one of the most popular interpretive elements in the renovated gallery, sometimes with lines of visitors waiting their turn to draw.

Before the renovation, educators, curators, and registrars worked together to try out paper prototypes of interactive exhibits with visitors in a small area in the art gallery. Staff from both art and education departments agreed on a philosophy of interpretation before the renovation began, so there was a shared understanding that the activities should promote meaningful, engaging, and educational experiences for a broad, diverse audience. The big idea for the "California People" section of the gallery, written jointly by art and education staff, is: *California artists depict and portray the human figure as they were inspired by the people and cultures of California.* One of our objectives was to increase visitors' awareness of the creative process.

A sign stating, "We are trying something new," let visitors know what was happening in the prototype area. The most popular activity we tested was a mirror with the heading, "Look in the mirror and draw yourself here." It was up for three months. During that time labels with instructions, questions, or prompts were printed on paper and could be easily replaced. Visitors drew self-portraits and wrote messages to exhibit developers on colorful sticky pads and attached them to large panels on a wall near four paintings from the museum's collection. The team wanted visitors to have the instant gratification of seeing their self-portraits displayed among portraits from the museum's collection.

One of the main challenges during the prototype testing was gallery maintenance. Once or twice every day, gallery staff had

to clear clutter off the table, check the supply of paper, sharpen pencils, and organize content. For this practical reason, a digital version seemed like the best solution for the final gallery interactive.

After we determined that currently available online software was too limited, we hired an outside media developer to produce software customized to the museum's design and functionality guidelines. This allowed us to develop something with a similar look and feel to other digital interactives throughout the museum. Staff tested several iterations of the screen layout to evaluate ease of use and clarity of language. Instructions were translated into Spanish and Traditional Chinese because these are the two other dominant languages in the San Francisco East Bay. The basic design and process of the interactive remained the same in the digital solution as it evolved from the paper version: Visitors draw a portrait and post it on the wall alongside portraits from the museum collection. A bonus of the digital solution is that visitors can access other people's portraits to see how they were drawn. When they select a portrait, the screen goes blank and then reassembles the portrait stroke by stroke.

The *You Are Here* drawing activity furthers our goal of making the Gallery of California Art a lively place for visitors and their families. Because it is so easy to draw their digital portrait, visitors feel comfortable trying it and feel successful in their creations. Visitors produce a few hundred drawings each week, and the saved portraits range from childlike to sophisticated drawings, indicating that the activity appeals to a wide range of individual ages and talent.

Future plans include replicating this or a similar experience on the museum website so participants can use their home computers and contribute to an online gallery.

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Henry, Barbara, and Kathleen McLean, ed. *How Visitors Changed Our Museum: Transforming the Gallery of California Art at the Oakland Museum of California.* California: Oakland Museum of California, 2010.

Nelson, Karen G. "From Analog Prototypes to Digital Drawing in the Gallery." *Journal of Museum Education* 36, no. 3 (Fall 2011).

educators, marketing personnel, and other staff. Each project team member spent about ninety hours attending workshops and planning, conducting, and responding to evaluation, and some spent even more time. The DIA's reinstallation guidelines stated: "Interpretation is better understood as a means of communication between the museum and its audience in which (1) the audience is encouraged to engage in satisfying experiences; and (2) the museum deepens its understanding of the audience for the purposes of better serving its visitors."[8] The new DIA has shorter labels, labels that relate to what the visitor can see, and installations that touch on common human experiences. And visitors have responded. The public support the DIA has received during the city's financial crisis has been remarkable.

USS Constitution *Museum*

The USS *Constitution* Museum realized that most of its visitors were family groups, yet staff knew little about this population. In an effort to better understand families and serve them better, the museum initiated the Family Learning Project.[9] Research from this project informed the wonderfully interactive exhibit *All Hands on Deck*. Extensively prototyped exhibits and label text are so engaging that even teenagers—a typically underwhelmed demographic—take part. As pertains to the labels, the developers declared: "Visitors *will* read. We promise. What's more, well written text will get visitors talking to each other. So, keep it short. Try the first person voice. Use quotes. Ask questions. And don't forget the fun."[10] All exhibitions and programs developed since *All Hands on Deck* was completed have included the process of prototyping and putting families first.

Los Angeles Museum of Natural History

The Los Angeles Museum of Natural History won Excellence in Exhibitions awards from the American Alliance of Museums for its substantially renovated exhibitions in the Mammal Hall (2011), the Dinosaur Hall (2012), and the new urban nature lab (2014). The staff has fully integrated their approaches to design, content, label writing, graphics, orientation, evaluation, and visitor-centered outcomes.[11] LAMNH credits its transformed exhibits for increases in visitor attendance numbers, satisfaction levels, multigenerational interactions, and dwell time.



FIGURE 9.6
No matter how visitor friendly your labels are, like the "Respect the Rat" panel at the Natural History Museum of Los Angeles County, live animals always attract more attention.

All four of the examples above, and many of the suggestions for being visitor friendly, are still well within the bounds of traditional approaches to museum exhibitions of the early 2000s. But today there are new questions that are challenging us: How can museums balance the limits of their own authority with the need to share it with others? When is the process of incorporating new voices and opinions into exhibit planning, involving a small number of participants, more important than the quality of the actual product that will be seen by thousands of people? How much information should be included in an exhibition when visitors are holding personal devices in their hands that can zero in on 19,500,000 possible answers to their questions in 0.36 seconds?

It is still up to the museum to decide what any exhibition will be about, whether it features the museum's collection or highlights the concerns of special interest groups not employed by the museum. What is written in the labels depends on the unique set of conditions of that museum, but label

writers can consider these guidelines for *how* to say it and write more user-friendly labels. And, let us hope, the writers will be supported by the powers that be.

NOTES

1. For provocative discussions, see Marlene Chambers's articles "Is Anyone Out There? Audience and Communication," "Beyond 'Aha!': Motivating Museum Visitors," and "After Legibility, What?" which are listed in the bibliography.

2. Sue Allen, "Looking for Learning in Visitor Talk: A Methodological Exploration," *Exploratorium*, 2002, http://www.exploratorium.edu/vre/visitor_research/allVRE.htm.

3. For a primer on putting visitors first, see Judy Rand, "The 227-Mile Museum or A Visitor's Bill of Rights," *Curator: The Museum Journal* 44, no. 1 (2001), 7–14.

4. Deborah Perry, *What Makes Learning Fun? Principles for the Design of Intrinsically Motivating Museum Exhibits* (Plymouth, UK: AltaMira Press, 2012).

5. Stephen Bitgood, *Attention and Value: Keys to Understanding Museum Visitors* (Walnut Creek, CA: Left Coast Press, 2013).

6. Barbara Henry and Kathleen McLean, ed., *How Visitors Changed Our Museum* (Oakland, CA: Oakland Museum of California, 2010).

7. The entire issue of *Curator: The Museum Journal* 52, no. 1 (January 2009), is dedicated to the Detroit Institute of Arts and has a collection of articles about the museum's reinstallation from many different perspectives.

8. *Curator: The Museum Journal* 52, no. 1 (January 2009), David Penney, 44.

9. "Family Learning Forum," accessed June 6, 2014, http://www.familylearningforum.org/index.htm.

10. "Family Learning Forum: Engaging Text," accessed June 6, 2014, http://www.familylearningforum.org/engaging-text/index.htm.

11. Kim Baer and Karen Wise, "The Role of Information Design in Sparking Visitor Interest, Engagement, and Investigation," *Exhibitionist* 33, no. 1 (Spring 2014).

10

The Label's Voice: Who Is Talking to Me?

Visitors hear a voice—a personality and a point of view—in interpretive labels, ranging from a single voice, to contrasting debates between duos, to multiple voices. Exhibit developers need to make the voice or voices clear and consistent.

The "voice" means who is speaking to visitors in the labels. Is it an institutional voice or a personal voice? Is it a knowledgeable expert? A close friend? A too-close friend? Should more than one voice be heard? The whole community? The default is the impersonal institutional authority museum voice.

Judy Rand gave some excellent advice for label writers in an American Alliance of Museums conference session titled "Finding Your Voice."[1] She describes a process for creating a hypothetical person's voice that has the right personality, rhythm, and flow for the messages being communicated:

- Imagine a real personality.
- Find models and examples.
- Get immersed in the vernacular.
- Use technical guidelines to analyze voice.
- Write style-setter labels for approval.
- Edit labels to match that style.

A key to this process is reaching agreement up front with the exhibition team and then sticking to it.

If the voice of the labels is unique to a specific real individual, it should be identified as such to the readers. Visitors should be aware, from the outset, that the labels were written with a personal viewpoint, if that is the case. Otherwise, visitors will assume that the institution's view, values, or opinions are being expressed, and that can lead to confusion. For example, labels for an exhibition of historical photographs of African Americans were written by a descendant of slaves of the period who used colloquial expressions, such as "mammie" and "boy." Some visitors took offense, thinking that the museum was speaking in a derogatory way. The author of the labels had been identified at the bottom of the introductory panel, but most visitors missed it. If the name and a photograph of the author of the labels had been obvious, this misunderstanding could have been avoided.

In an exhibition about an environmental crisis caused by industry, should visitors be allowed to hear the industry's side of the story? This decision should be driven by the definition of the exhibition's big idea, but whichever voices are chosen to express it, they should be clearly identified. In *Darkened Waters: Profile of an Oil Spill*, the credit/introductory panel stated that the "we" speaking in the exhibition was the staff of the Pratt Museum in Homer, Alaska, who originally developed it. Throughout the exhibition, other voices were heard as well: industry professionals, spill workers, Native Americans, other residents of the spill zone. The author's name and affiliation or the source of the label's content were written on each label. Their points of view often provided interesting contrasts. It was clear that there was not one simple explanation for the spill, no clear or easy solutions to the problem, and no foolproof way to avoid another spill. The various voices gave visitors a variety of perspectives from which to think more deeply about their own prejudices and points of view.

IDENTIFY POINTS OF VIEW

In addition to the voice of who is talking, exhibit developers need to clarify an exhibition's point of view and make it clear whose point of view is being communicated to visitors. This is particularly important in exhibitions that present some form of debate, issue, dialogue, or strongly held opposing views.

At Brookfield Zoo's *Voices of the Forest* exhibition, four points of view were created: the indigenous people who lived deep in the forest, the indigenous people who lived at the edge of the forest, the Western zoologists who studied the animals living in the forest, and the local rangers hired to protect the forest. Each interpretive label contained one point of view, and up to three labels were posted at a time. Contrasting points of view were allowed to coexist; no attempt was made to resolve them.

Some exhibitions have been picketed, shut down, or never even allowed to open because of criticisms over the points of view portrayed in them. Neil Harris, a professor of history at the University of Chicago who writes and speaks often about museums, calls what is happening to museums in the last forty years "a blurring of cherished artifacts and social contexts, scholarly research and exhibition venues, aesthetic values and cultural meanings."[2] Whereas museums used to be more about objects and authoritative points of view, they are now more about interpretation, and whose interpretation it is should be stated. If interpretive exhibitions present multiple meanings, and "right" or "factual" are matters of opinion, visitors will have to adjust to a new, unexpected, nonauthoritative stance, and it is the museum's responsibility to help them see the difference and make that adjustment.

At the Brooklyn Historical Society, a *Public Perspectives* gallery is set aside for changing exhibits developed by members of the community. At the Oakland Museum of California, in a small gallery about the 1960s, *Forces of Change*, twenty-four individuals were invited to each set up a case containing personal objects and memories of that time. Many other places are experimenting with sharing authority and giving voice to previously unheard histories.[3] The same criteria and advice for writing effective museum labels given in this book will guide these new community curators who can easily make the same mistakes (too long, unfocused) that the old in-house curators are learning to avoid.

Whether the label's voice is institutional, personal, or multiple, it should be discussed and decided *before* the labels are drafted. It is difficult to go back and put one in or change it after the fact.

In an outdoor location, the exhibit developers took a unique approach to interpretation through specific artworks designed to let the landscape speak. The artworks were designed to provide an aesthetic, affective relationship to nature, and the accompanying labels needed to do the same.

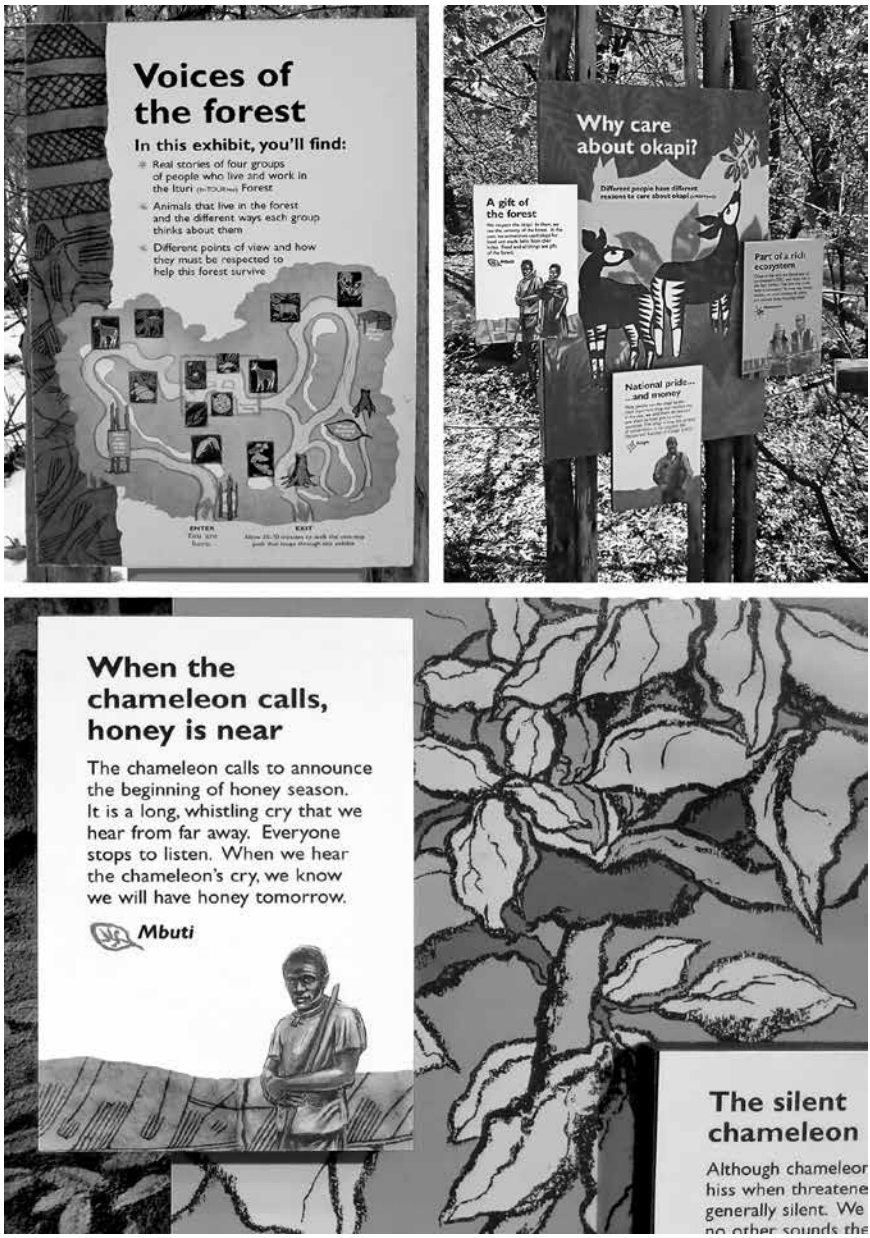


FIGURE10.1

The *Voices of the Forest* exhibition at Brookfield Zoo shares the points of view of different groups of people about the Congo forest animals. These labels note that the African Mbuti hear the chameleon's call; the American researchers don't.



FIGURE 10.2
The nature of authority and who has the right to decide is up for debate in museums today. Whose opinion is expressed in exhibits needs to be identified.

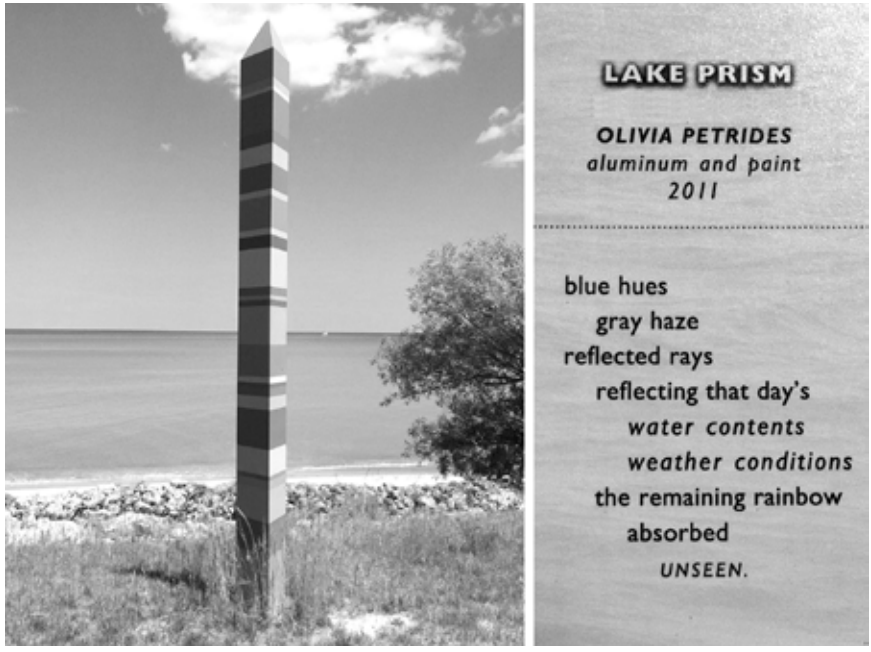


FIGURE 10.3
What color is the lake today? A multicolored obelisk sits near the shore of Lake Michigan. The *Lake Prism* interprets the changing hues, giving voice to the landscape.

CASE STUDY

READING THE LANDSCAPE

by Lisa Roberts, Principal, naturalia, inc.

Openlands Lakeshore Preserve is a seventy-seven-acre nature preserve just north of Chicago. Once the site of a military base that was decommissioned in the 1990s, the area includes exemplary habitat along with industrial artifacts like trestles and retaining walls. This is not your pristine wilderness. But it is that combination of nature and culture that was the inspiration for the site's interpretation—by repurposing the latter to give voice to the former.

One of the consequences of living in an urban-centered world is that many of us have lost the ability to "read" the landscape. While Openlands' ulterior goal was to turn people into environmental advocates (aim high!), we knew that the first step was to help them see what was before their eyes. Connect. Be moved.

And so we turned to artists, masters of vision. We commissioned several permanent, site-specific artworks, including some inspired reimagination of existing built elements. The art was explicitly interpretive: Artists worked closely with staff to create pieces that would convey specific messages and experiences. The idea was to give voice to the landscape—not through didactic signs, but through aesthetic forms designed to expand the way visitors see and experience nature.

The accompanying labels were created to do the same. They give voice to the landscape by giving meaning to the art. The text was an artistic product unto itself—composed in a literary style that is both poetic to the ear and rich with interpretive content. Just as important was its presentation to the eye, the layout a near mathematical system of organization that uses space and indentation in place of punctuated blocks of text.

Art, poetry, nature. All entwined, each a lens to the other.

CAN I JOIN THE CONVERSATION?

Let visitors have some time to do the talking. Labels can tell stories that encourage a three-way conversation between the label writer, the reader or readers, and the museum objects on display. Labels can help do this by being short and by encouraging participation. Let the labels be an easy jumping-off point for visitors to talk to each other in their social groups.[4] In history museums, visitors often share prior knowledge and memories with each other. In a science museum, next to X-rays of human bones, the short labels gave only the person's age and the bone's name, which prompted many memories like, "Remember when Grandma . . ." In art of the Renaissance, images of Jesus, Mary, the nativity, and other biblical stories give Christian visitors a sense of familiarity and connectedness to their prior knowledge.[5]

Invite Participation

Ask questions and let visitors post their answers. Darcie Fohrman, an independent, award-winning exhibition developer, has incorporated visitor talkback spaces in the exhibits she has designed for many years. She says that the secret to getting good feedback and thoughtful answers to the questions asked at a talkback is to ask a good question. How can you tell if it's a good one? Try it out.

Nina Simon has been the champion of visitor participation in museums at many levels in many ways. Her book, *The Participatory Museum,* gives advice on how to experiment with audience participation without upending the traditional museum model.[6] She asks how cultural institutions can use participatory techniques to give visitors a voice and to develop "experiences that are more valuable and compelling for everyone." Her answer: Participatory experiences have to be successfully designed "so the content that amateurs create and share is communicated and displayed attractively." Museums have to maintain their talkback panels daily for neatness and to cull rude comments or artworks.

Invite participation, and make it clear how to do it. There was a missed opportunity for visitor participation in an innovative art exhibition that combined the collections of two museums—the San Francisco Museum of Modern Art (which was closed to the public at the time for renovations) and the Asian Art Museum—under the title *Gorgeous*. Modern and Asian objects in the exhibition were displayed side by side, with labels by two

curators speaking about what they found "gorgeous" in each work of art. Videos outside the exhibit galleries featured people on the street talking about what was gorgeous to them. The premise of *Gorgeous* was that the curators spoke directly to visitors through first-person labels about why *they* thought a particular object was gorgeous. In turn, the curators asked visitors their opinions about what they found gorgeous. The only problem was, there was nowhere for visitors to speak or record their opinions. No iPads in the gallery where they could make comments. No talk-back board *anywhere*. No place on the website of the Asian Art Museum for visitors to contribute when they got home. Or did the curators mean that visitors should just talk among themselves? The intent was not clear.

BEWARE OF TOO MUCH "YOU" VOICE

In an effort to appear friendly, many exhibit labels use overuse the "you" expression, which can become annoyingly coy. Avoid this mistake by clarifying the big idea at the beginning and deciding early who the voice is and who you are talking to. As with most guidelines about labels, you can break them creatively.

NO SUCH THING AS NO VOICE

Even though there might not be words on the walls, such as an art exhibit that uses only an introductory label and no other interpretation, the exhibition will still have a voice that is delivered by the design (e.g., color, lighting, juxtapositions), that, just like words, should speak clearly.

NOTES

1. Judy Rand, "Finding Your Voice" (presentation, American Alliance of Museums Annual Meeting, New Orleans, Louisiana, 2004).

2. Neil Harris, "Exhibiting Controversy," *Museum News* 74, no. 5 (September/October, 1995).

3. Both of these examples are discussed in chapters found in *Letting Go? Sharing Historical Authority in a User-Generated World* (Philadelphia: Pew Center for the Arts & Heritage, 2011), edited by Bill Adair, Benjamin Filene, and Laura Koloski.

4. Paulette M. McManus in "Watch Your Language! People Do Read Labels" and Lois H. Silverman in "Of Us and Other 'Things': The Content and Functions of Talk

by Adult Visitor Pairs in an Art and a History Museum" point out some socially determined patterns of visitor conversations in museums.

5. Detroit Institute of Arts, "Phase 2 Summative Evaluation of DIA Interpretive Strategies" (unpublished report, Detroit Institute of Arts, 2012).

6. Nina Simon, *The Participatory Museum* (Santa Cruz: Museum 2.0, 2010), http://www.participatorymuseum.org.

III

ENHANCING THE VISITOR EXPERIENCE

11

Hierarchies

Creating exhibit experiences through a hierarchy of different kinds of messages and different modes of presenting information will provide for variety, add logic to the design, and reinforce ideas throughout the exhibition.

It is a redundant cliché to say: *The exhibits are conceived as a series of layers, making information about the objects accessible to visitors with different backgrounds and interests.* The idea of "levels" or "layers" of messages is a popular one among museum practitioners because it seems intended to make exhibition concepts appealing to more diverse audiences. People's different learning styles or identities are thought of as being served by offering different levels or layers of information. Exhibit planners use these words frequently to describe the organization of information in exhibitions, often without clearly defining what they mean. Thus, confusion reigns about what it means to design a layered exhibition, and label writers, furthermore, are confused about how to write levels of information.

Learning styles, identities, and audience segments (e.g., Explorer, Self-Improver, Experience-Seeker, Families) are *nonhierarchical*. These groupings have to do with people's preferences about what they like (motivations) and how they receive (modalities) and process (styles) information. Styles and preferences are not relatively better or worse, they are just different. Similarly, visitors' interests are not a property or quantity that should be thought of as

having layers (e.g., more interest, less interest) because of the implied value judgment that relegates "less interested visitors" to a lower status. Levels of interest suggest, consciously or unconsciously, that "more interested visitors" are the favored, desired audience. This notion runs counter to any genuine effort to reach a broader audience. Because visitors self-select to visit an exhibition, we should assume that they are *all* interested visitors: Their interests are based on diverse combinations of experiences—different, but not better or worse. Audience segmentation works best for targeted marketing purposes—getting different people into the museum—but when they come into an exhibition, it needs to be as inclusive as possible, because the labels will be encountered by all types of people. It's bad if half of the visitors feel like the labels are not meant for them.

I wanted to write this chapter to debunk the typical notions of layers or levels of information that are based on museum practitioners' assumptions about visitors' knowledge and to eradicate the words *layers* and *levels* from our discussions. But I realize that those words are too much a part of museum language to abolish them.

FOUR RECOMMENDED WAYS TO DEFINE HIERARCHIES OF LABELS

I strongly recommend that we discuss and define label hierarchies more clearly, and I suggest these four ways: as messages defined by the label's purpose, or by intrinsic complexity of the content, or visitors' time budget, or by feet from the floor.

Hierarchies Defined by Purpose

To increase the effectiveness of text-based components, different labels can be given a clear hierarchy by type (e.g., introductory, groupings and themes, object labels, points of view) as the exhibition is developed and designed. Examples of some of these types were discussed in chapter 3. The hierarchy can apply to individual components within the whole exhibition, as well as to the organization of information on individual panels.

The trick, however, is making the organization logically apparent to visitors. The content, design, and placement of labels enable visitors to figure out quickly which labels go with specific objects (e.g., captions), or which group label interprets a case or area. The typographic design of different texts can reinforce the nature of the different levels and purposes. Consistency of ty-

pography and design cues is important, because they help signal visitors as to the label's status. Labels that lack these differentiations can be much harder to decipher. On the other hand, don't set up a hierarchy of design and become a slave to it in a way that prevents flexibility when it's called for.

Too often, visitors cannot decode label hierarchies and purposes. For example, labels in a similar design with the same type size and typeface but with different purposes can be confusing. Another big pitfall is the partially developed or incomplete system of levels, where certain label types are clearly defined (e.g., title, introduction, subtheme/area labels) and the remainder are a mishmash of one- and two-of-a-kind designs, sizes, colors, and purposes thrown into an undefined category called "other."

In the planning process, and in the final realization, the exhibit design and the communication goals—guided and limited by the big idea—need to be clearly defined and tightly structured together. Types of labels that are defined by their purpose will help exhibit planners agree more readily on the content, and because purposes can be matched to outcomes, it will also be easier to agree on evaluation criteria. Meanwhile, the label writer will have better direction and clear limitations within which to work.

Hierarchies Defined by Intrinsic Complexity

In any exhibition, some elements and labels will naturally be more complex than others, as dictated by the content. All parts of an exhibit story are not equally complicated. Even if it is a complicated idea, if it is integral to the big idea, it belongs in the exhibition. For example, when trying out mockups for an exhibition about forensics, exhibit developers had trouble with an interactive device about a chemical test for antibodies. The activity was frustrating and unclear to visitors. Repeated tests and modifications led to improvements, but the exhibit was not easy for visitors without prior knowledge of protein chemistry. Exhibit developers decided to keep the exhibit element in, even though it was hard for most visitors to understand, because it was one of the most important and commonly used tests by forensic scientists. The assumption was that visitors would see that some of the tests were more complicated than others. Because the exhibit developers had tested the exhibits as prototypes, they knew most visitors would be successful with the other units, which they hoped would build visitors' confidence with this more difficult one.

Some labels need to be longer because they interpret more intrinsically interesting objects—as defined by what is interesting to the visitors and the nature of the objects. Visitors are more likely to read a long label about an electric eel, Lincoln's bed, or Bruegel's wedding dance than things with less common appeal.

Difficult ideas should be selected for inclusion based on their appropriateness to the big idea, not just for "smarter" visitors. During a workshop on labels a long time ago at the Exploratorium, we joked about putting a banner across some of the more complex interactives that said, "For rocket scientists only." That would be a good way to inform most visitors that indeed the exhibit was not meant for them, unless of course there is a high percentage of rocket scientists in the audience.

Hierarchies Defined by Time

Architects and designers estimate budgets for huge projects on the basis of size—the number of square feet of a building or room. I believe that exhibit planners could make use of similar time-budget figures based on how much time visitors typically spend in exhibitions.

Visitors use time budgeting by asking themselves (either consciously or unconsciously), "How long do I want to spend in this exhibition?" The answer is related to the size of the exhibition, its density (e.g., the number of elements, types of activities), the visitor's social group, and the visitor's perceived interest in the subject or activity, as well as the nearness of a restroom or cafe, or when their parking meter will expire.

Speaking of restrooms, most visitors will make a trip to one during their visit to a museum. Why not let visitors use some of that time looking at a label with relevant copy in the stall?

Rather than making assumptions about visitors' motivations or bladder sizes, I use two metrics of time: (1) the *average time* visitors might be expected to stay, and (2) the *sweep rate*, which is an index for a rate of time per unit space as visitors walk slowly along, looking around, stopping occasionally. The sweep rate is derived from empirical data gathered from more than one hundred different exhibitions of varying sizes and topics (e.g., astronomical instruments, Native Americans, teens, kelp forests, mammals of North America, frogs, furniture, genetics, global warming, diamonds, Star Wars, race, and mummies).[1]



FIGURE 11.1
Context counts. Labels can be where you least expect them, interpreting facts not usually discussed, in a space designed for other functions. But you are there: Interpret the moment.

The conclusions drawn from the findings of the time database are that visitors by and large do not spend much time in exhibitions, certainly not as much as many museum staffs would like to think. The average time spent is around twenty minutes, and the average sweep rate is around three hundred—in which a visitor covers 300 square feet per minute, which is useful information for planning new exhibitions. What can visitors comfortably do in twenty minutes, without feeling bored or overwhelmed?

In exhibitions with an intended educational purpose, communication objectives, and a big idea, every exhibit component or activity can be integrated in a realistic time frame. Each exhibit element in an exhibition can be considered as a unit of potential time; for example, it takes five seconds to look at this; it takes twenty seconds to read that; this video lasts four minutes; or it will take people about ten seconds to figure this out. Then the exhibition is planned so an appropriate number of elements can be used and experienced in the amount of time that the majority of visitors are likely to spend. The most logical order in which to use these elements and the amount of time estimated to use each one should be clearly understood and defined by the

CASE STUDY

UNEXPECTED LABEL

by Barbara Becker, Exhibit Planning and Research

A new nature center in a Chicago suburb installed ten labels in the restrooms—above the sinks and urinals and inside the stalls. In keeping with the location, the content concerned elimination in the natural world.

With the main idea of "Everything in nature has to go to the bathroom," the stories began on the central wall outside the restroom doors, and continued inside. Featuring illustrations and a free use of the words *poop*, *pee*, and *fart*, the labels are aimed especially at kids aged preschool and up and tell short stories (twenty to thirty words) from the natural world. For example:

A roll in poop can mean protection: Potato beetle larvae cover themselves in their own poisonous poop. Predators soon learn that eating those larvae is a dangerous—and yucky—idea.

Exhibit developers for the nature center hoped to make visitors stop and think in a setting where they might normally not be paying much attention, and at the same time to connect them with nature in a new (and very personal!) way by talking about a subject that doesn't often get mentioned. While a number of the labels were placed too high for the smallest kids to see the illustrations, anecdotal observations (laughter, calling others over) indicated success with some visitors.

exhibit developers. Time-budget planning by the team will help make exhibitions that are not overwhelming to the majority of visitors. Instead of giving visitors fifty choices and activities or labels that take a long time to use, try giving them fewer choices or activities that take less time.

Share your time-budget planning with visitors. People appreciate being given information that will help them make intelligent choices. If an exhibit

element has a set time span, it should be clear to visitors, for example, "Push button for a three-minute video," or "Fifteen-minute tour begins here," or "This activity takes about four minutes."

Time-use categories are more practical, empirical, value-free, clear, and objective for planning and evaluating exhibits than the untested assumptions that "streakers" will only read one level of label and "studiers" will read them all.

Hierarchy Defined by Feet from the Floor

Before leaving the good examples of hierarchies, there is one other definition that should be mentioned: physical height from the floor. Two examples of this are tall labels with text at eye level for adults and large graphics below at a child's eye level; and small, simple interactives or touchable objects at a child's height.

LEAVE ROOM FOR FLEXIBILITY

Don't set up a hierarchy of design in a way that prevents flexibility when it's called for. While hierarchies can definitely help developers organize content

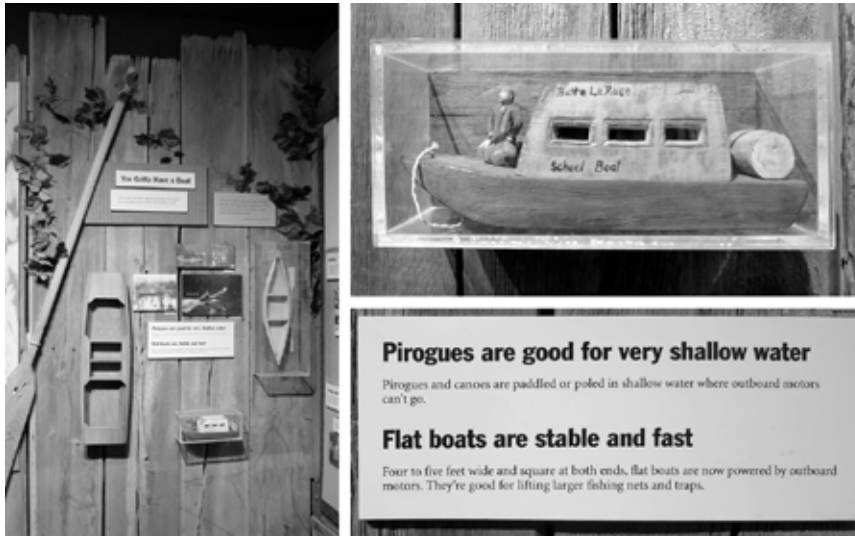


FIGURE 11.2
When arranging objects on a wall, put ones that will appeal most to children at their level, the way the cute school boat is mounted at a child's eye height in the swamp exhibit at Brookfield Zoo.

CASE STUDY

LEAVE ROOM FOR FLEXIBILITY

by Katherine Whitney, Principal, Katherine Whitney & Associates

For the exhibition *Animal Eyes*, created in 1998 for the Museum of Vision in San Francisco, we developed several types of labels: exhibit title and introductory text; area title and introductory text; topic header and body text; and explanatory and interactive labels.

Each of these "layers" had a specific purpose in the exhibition. The exhibit title and introductory text were the first thing visitors saw when they entered the exhibition. The area title and the text below it defined the different sections of the exhibition (e.g., "Different Kinds of Eyes," "Night Eyes," "Seeing in Color"). A header and body text introduced each new topic ("Does my dog see color?" "Bees see UV, how do you see color?"). Explanatory and interactive labels were specific to one exhibit element, including identification labels for models, diagrams, instructions for interactive exhibits, flip panels, and photo captions.

The design style system was helpful during the development process. Once we identified what type of label we needed, we had a formula to follow for how to write it and what it was supposed to look like. However, there were drawbacks. The client and the designer latched on to the inherent consistency of the labeling system, and sometimes we were forced to use it even when it didn't work that well.

In one section of the exhibition, about the location of animals' eyes, we didn't have that much to say in the introductory text. The message is pretty straightforward: different animals have eyes in different places. But the client and designer wanted us to add more text so that the introduction would look similar to the other introductory sections in the exhibition. So we added more text. In another section, we wanted to show lots of examples

of different animals, but we didn't have enough to say about each animal to warrant a header *and* body text. Labels were mostly captioned photographs—the fourth "layer" of labeling. Some members of the development team weren't happy about dropping the header and body text. So it might have been more effective to treat this section in a completely different manner.

At the end of the project, we asked ourselves if our layered label system worked. We conducted extensive evaluation (timing and tracking, pre-post test, and cued interviews). These studies told us that 97 percent of visitors read labels and 50 percent read them out loud. Data from cued interviews tells us that 66 percent of the visitors could articulate the big idea. That made us very happy. But was it because of our layered labels? Hard to know, because we didn't test the system specifically.

How do you know if your layers work? Are they for ourselves, to lock in a design system, or are they for the visitors? In hindsight, we should have been more flexible and let content dictate design as well as the design guidelines.

during the development stage, it's important not to be a slave to that organization. Developers of the exhibition *Animal Eyes* found that sometimes a labeling system can be too rigid.

CHUNKS INSTEAD OF LAYERS

Writing and designing exhibit text in "chunks" of information make exhibitions more accessible in a nonlinear, time-limited way. Chunks are typically text blocks and illustrations—functioning at the caption level and purpose—that can be read in any order and in any quantity. The illustrations tell part of the story, and all of the text is written at the same level of detail. Visitors who choose to use more chunks will spend more time. Visitors who have more time to spend can use it by using more chunks. Chunks do not have a hierarchy. Chunks form networks of ideas in an exhibition.

At the National Postal Museum, the exhibit developers initially thought of their interpretive information as being "layered." They identified specific interpretive techniques for six exhibit components: large panel texts, quotes on walls (sometimes two quotes with different viewpoints), object label copy, mechanical and computer interactives, videos, and special interpretive panels. After the exhibition was open and had been evaluated, they revised their understanding of levels to a more inclusive, rather than exclusive, definition. The museum staff's notion of layering was modified to conform more to how visitors actually used the exhibit. Rather than expecting visitors to do some things first, or assuming that some visitors will seek out only one type of modality over another, the exhibit designers realized that they had provided several different types of experiences—modalities (interactive, video, text)—with no actual hierarchy, which offered many different opportunities for communication of the main messages to a wide range of visitors. Instead of thinking of this as a "layering of information," they began to think of it more as a "buffet of opportunities." The buffet metaphor suggests a variety of opportunities *that all fall within one theme, for one general audience*. Visitors were free to pick and choose which elements appealed to them, and any of their choices were likely to add up to an experience that was within range of the exhibit developers' intended goals.

What all of the examples of labels and messages discussed above have in common is that they are messages meant to serve different functions, rather than labels meant for different people.

PITFALLS OF THE "LAYERS" AND "LEVELS" APPROACH

The next four types of layering of information are common, but I believe they have some serious faults—mainly because they encourage information overload in exhibitions. These levels are based on assumptions about differences in the quality or amount of interest, ability, or intelligence among visitors, which implies a pejorative hierarchy in which those possessing more have some priority or favor over visitors with less.

The Something-for-Every-Special-Audience Layering System

The worst example of layering or levels comes into play when exhibition planners (often large teams of staff and exhibit consultants) try to accommodate every different learning style, gender difference, developmental

category, intelligence type, interest, and experience level. It's easy to agree to do this in order to avoid telling members of the team that they are trying to put too many ideas into the exhibition. Every addition can be defended by the rationale, "This part is for young children, or the scholars, or the women, or intuitive learners, or families . . ." or whomever. What they really mean is, "Someone, somewhere, sometime is bound to find this interesting because I do, and I don't want to leave it out." Their evaluation criterion is, "If one person in one thousand gets turned on by this, it's worth it to me, so put it in." Today's educators commonly make the something-different-for-each-audience mistake. The result is unwittingly equivalent to the age-old curators' mistake of writing primarily for their peers—an exhibition that is overwhelming and underused.

The "More-Interested-Visitor" Layering System

The notion of adding information "for the visitors who want more" is a well-intentioned idea that is rarely realized successfully in exhibit labels. Dense or specialized texts will not be used by enough people to justify the time it takes to research, write, edit, design, fabricate, install, and light it. More importantly, there seems to be no good way to signal those few "serious" visitors whose levels make higher intellectual demands without being demeaning, overwhelming, or confusing to the rest of the visitors. For example, after attempting a multilayered approach to match a variety of visitors' knowledge and interests in the *Human Biology* exhibition at the Natural History Museum in London, Roger Miles concluded, "It is better to concentrate on communicating some basic ideas than to fail to get anything over at all, and we feel that it is better to concentrate on succeeding at one level than to risk failure at two or more."[2] Perhaps the signaling devices needed to be less subtle. For example, on an element that requires a sophisticated understanding of DNA, put a big sign that announces, "Genetic engineers love this one!"

In the exhibition *Prehistoric Journey* at the Denver Museum of Natural History, planners organized the information according to three audience levels of interest—"Discovery" for children and low-interest, low-knowledge visitors; "Exploration" for most visitors, either individuals or in groups, and browsers; and "Study" for "motivated learners who prodigiously read," amateur paleontologists, and more-interested repeat visitors. "Discovery," "Exploration," and "Study" levels were signaled with graphic design cues. For example, the

signal for study-level information is a panel shaped like a large, open book. A magnifying glass signaled the discovery level. Summative evaluation revealed some insights and hindsights about the extent to which these assumptions and predictions about levels of interest worked successfully. Although the three levels of interest were originally defined by types of visitors, in their final form the levels were assigned to different interpretive strategies—defined by their purpose, with separate topics, rather than about "pigeonholing" visitor styles. The discovery exhibits ended up being used most frequently by visitors regardless of knowledge or age level, and "people who *study* in exhibits tend to look at almost everything, no matter what level it is presented on."[3]

Sometimes layers of more information are hidden by a system of multiple flip labels. This design structure has the advantage of keeping words out of sight and off the walls. In the exhibition *Beyond Numbers* at the Maryland Science Center, little tabs that say "solution" or "more about math" signal users about the nature of the information contained on layers below. Some exhibit developers felt, however, that some of the information was added to appeal more to the advisory group of mathematicians than to the visitors.

The disadvantages of this layered approach are the same: presenting overloads of information that lead to underuse by visitors. Something for almost everyone *can* be achieved in exhibitions by striving for inclusive, broad appeal, not by segmenting experiences into mutually exclusive audience categories.

The best way to provide more information is in a form other than labels, such as a brochure, catalog, website, or better yet, let them Google it for themselves.

The IQ Layering System

Probably the most common definition of levels or layers relates to a knowledge hierarchy where the amount of information that visitors bring to the exhibition is assumed to fall into categories, such as novice (no prior knowledge) to expert (lots of training, high vocabulary). Inherent in this assumption is the tendency to try to appeal to the mythical more-interested visitor and to avoid the dreaded lowest common denominator.

This unfortunate example of layering and levels is based on visitors' supposed intelligence; for example, "This label is for the dummies" or "This label

is for smart people who are knowledgeable about the subject." The result can be an insulting, underutilized exhibit, where levels of labels either pander or baffle. Labels without humility are pompous and insulting. Certainly there is a range of visitor intelligence, but for the developers to make decisions based on assumptions about IQ is unnecessary and degrading to visitors.

Many curators voice their fear and repulsion of dumbing down their content. There is, however, a huge difference between simplification and clarity. Too much complexity and simplified content both can have the same result: making a visitor feel stupid. Clarity, on the other hand, results from a process that focuses on one big idea and helps all visitors feel competent.

The Hierarchy of Knowledge Layering System

A fourth example of layers or levels that works *against* making exhibitions more appealing and thoroughly used is one in which label information is organized from simple to complex, or from general to specific.

A hierarchy of knowledge gives rise to trilevel labels with the most general information first in the largest type, more details next, and minutiae in the third paragraph in smallest type. This hierarchy is based on conceptual, abstract knowledge, where "simple" or "general" may have nothing to do with visitors' primary questions prompted by the exhibition context. Similarly, "complex" may take visitors far beyond anything suggested by the exhibition itself. The notion of simple-to-complex lacks sensitivity to the immediate, contextual needs of visitors and their curiosity and information priorities.

The assumption that visitors who are in a hurry or are not very interested will read only the first, top, or large-type text part of a three-tiered label is a largely untested assumption. Most visitors in a fast-browsing mode are scanning for concrete, specific tidbits of information; they are not reading paragraphs of general or abstract concepts. We do know from visitor studies that visitors are more likely to stop and read a caption next to an interesting-looking object than to notice the introductory or section titles and labels.[4]

A variety of messages in a clear hierarchy—by purpose, by intrinsic complexity, or visitors' time budget—will provide logic, interest, and considerations for visitors' typical behaviors in exhibitions. The use of a variety of modalities will provide visitors with the chance to use more of their senses.

NOTES

1. Beverly Serrell, *Paying Attention: Visitors and Museum Exhibitions* (Washington, DC: American Association of Museums Press, 1998); Beverly Serrell, "Paying More Attention to Paying Attention," *Informal Science: Learning Sciences*, March 15, 2010, http://www.informalscience.org/perspectives/blog/paying-more-attention-to-paying-attention.

2. Roger S. Miles, "Lessons in 'Human Biology': Testing a Theory of Exhibition Design," *The International Journal of Museum Management and Curatorship* 5 (1986).

3. Margie Marino, "Prehistoric Journey Summative Evaluation Report" (unpublished report, Denver Museum of Natural History, December 1996).

4. See Bitgood for reference on using captions the most. Stephen Bitgood, *Engaging the Visitor: Designing Exhibitions That Work* (Cambridge, MA: MuseumsEtc., 2014), 72.

12

Modalities

Modalities are the forms, or modes, of presenting information or experiences. Different modalities provide choices of ways for learners to receive information, which can, therefore, appeal to a broader range of learners. They provide a useful concept for planning formal educational experiences as well as for informal exhibitions.

Different modalities provide choices of ways for learners to receive information, which can, therefore, appeal to a broader range of learners. The most basic exhibit modes are objects and labels, but with creative use of low and high technology, today's opportunities include a wide range of sensory inputs.

Applied to exhibit elements, available modalities include written words (labels, brochures), images (photos, movies), icons (symbols), sounds, touchable objects, smells, devices to manipulate (mechanical and electronic interactives), illustrations and other forms of graphics (charts, maps, diagrams), demonstrations, computers, and other digital devices brought with the visitors (e.g., smartphones) or digital equipment loaned to visitors, as well as the architecture, lighting, colors, and exhibit pathways and boundaries. Integrating these modalities to achieve shared goals of communicating the exhibit objectives is the essence of experience design[1] and intentionally designed spaces.[2]

While individual visitors may have preferences for certain modalities over others, the immediate appeal and context of a well-designed, well-placed



FIGURE 12.1
In the Huntington Conservatory's *Plant Lab*, a tabletop exhibit about leaf textures combines label texts, a video microscope, drawings, and real plants. Many modes make an integrated presentation.



FIGURE 12.2
A 200-square-foot multimodal space, *Otters and Oil Don't Mix*, interpreted the *Exxon Valdez* oil spill at Shedd Aquarium. The exhibition included photos, labels, artifacts, a small diorama, video, an interactive computer—and four otter pups rescued from the 1989 spill.

exhibit element can override a prior attitude. For example, "I don't usually watch videos, but this one was really interesting," or "I don't like to take docent tours, but I overheard this really good one," or "I don't usually use computer interactives, but I wanted to sit down for a while, and it turned out to be fun."

The best way to develop different modalities is to select the exhibit technology for each element based on the content and communication objectives. Instead of saying, "The exhibit should include videos and computers," exhibit developers should be asking, "What is the best way to tell this part of the story—a photograph, a video, an interactive device, an object, a group of artifacts, a re-creation of an environment?" That way, the variety of modalities evolves authentically and appropriately.

Consider also the limitations and drawbacks to some modalities, such as videos that often have low attracting power and low holding times. A video is not a good modality for a message that needs to reach the majority of visitors.[3] But forcing visitors to sit through an introductory video before releasing them to the rest of the exhibits is mean.[4]

When a variety of modalities carry similar (reinforcing, overlapping) messages, the exhibition as a whole will build toward and support a big idea coherently and completely for the greatest number of visitors. Thinking of modalities as parts of a whole leads to a sense of inclusiveness and interconnection for the entire exhibition and the total visitor population.

It is less helpful to think of a visitor as preferring only a single, exclusive modality or having only one developmental level or learning style. This narrow thinking tends to encourage the design of less coherent exhibit elements and ones that will appeal to a smaller fraction of the audience. There are many examples of where adults perceive an interactive element as being only for children, and they feel silly using it or expect it to be childish and unappealing to grown-ups. Unfortunately, it is often true that interactives are simplistic or ungratifying for adults, but they don't have to be. Even in children's museums, I would venture to suggest that exhibitions targeted for anyone over the age of six would benefit from the same kinds of conceptual integrity, intellectual clarity, and personal meaningfulness as is appropriate to any and all other exhibitions. For an excellent example of this, see Sue Allen's summative evaluation of *Secrets of Circles* at the San Jose Children's Museum.[5]

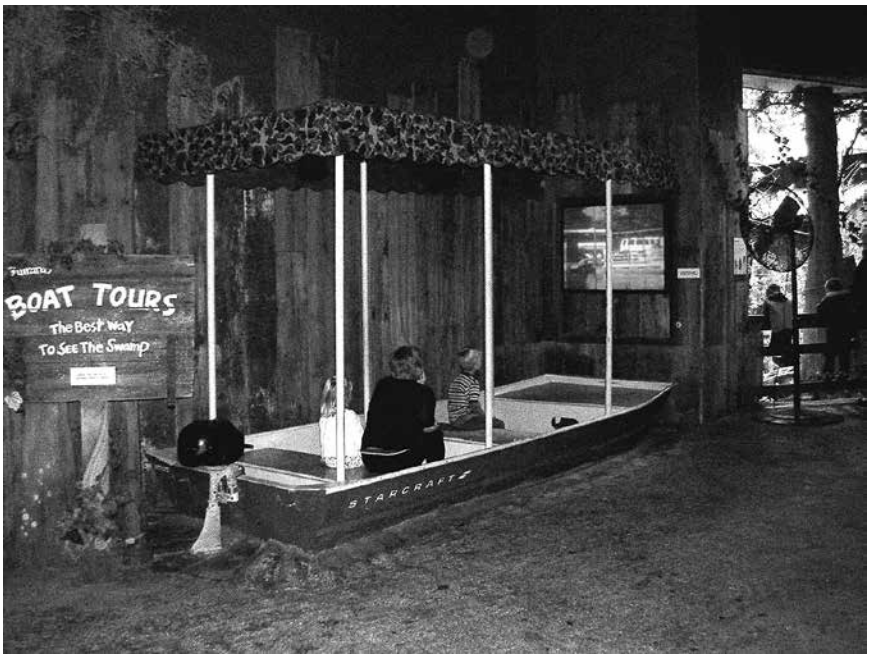


FIGURE 12.3
At Brookfield Zoo you can sit in a boat and go for a virtual tour of the swamp. Simulations provide new perspectives and meaning in a you-are-there experience.

Virtual, nonreal modalities can function as well, depending on the situation, availability, and purpose. A replica, a combination of real and fake, a model based on reality, a model based on conjecture, a 3D animation constructed from historical photos—all of these have the power to fire the imagination, and it is the museum's job to present them in ways that will help that happen.[6]

A final thought about a very powerful modality: the real thing. Many museums collect, store, conserve, and display real stuff—and that's what visitors come to see. Forget the label, forget the video, never mind the digital device that gives you access to a multitude of facts about it—you get to see the real thing, be in its presence, find out how big/small/shiny/awesome it really is. For many people, their experience with the real thing will always be of primary importance.

Notions of levels, layers, modalities, and learning styles have great appeal to exhibit developers because they offer the promise of something for everyone in exhibitions. But they are often poorly defined and don't provide easy answers. To solve the complicated problems of how to use labels to communicate content, we have to understand the multiple guidelines, possibilities, and limitations of the written word in exhibitions. The next four chapters deal with other ways to increase the appeal and accessibility of labels for broad audiences through design, questioning strategies, interactions, and digital devices.

NOTES

1. Daniel Spock, "Theoretical Underpinnings," in Donna Braden, Ellen Rosenthal, and Daniel Spock, "What the Heck is Experience Design?," *Exhibitionist* 24, no. 2 (2005): 14–16.

2. Philip Bell, Bruce Lewenstein, Andrew W. Shouse, and Michael A. Feder, ed., *Learning Science in Informal Environments: People, Places and Pursuits* (Washington, DC: National Academies Press, 2009); *Exhibitionist* 33, no. 1 (Spring 2014).

3. Beverly Serrell, "Are they Watching?: Visitors and Exhibition Videos," *Curator: The Museum Journal* 45, no. 1 (2002): 50–64.

4. My note about "mean": By "mean" I mean it is controlling and unnatural to trap visitors in a free-choice environment where they should be allowed to move or stop as they please.

5. Allen & Associates, "*Secrets of Circles* Summative Evaluation Report" (report prepared for the Children's Discovery Museum of San Jose, October 2007).

6. There is a good discussion about "Objects: Real or Not Real" in Carolyn P. Blackmon, Teresa K. LaMaster, Lisa C. Roberts, and Beverly Serrell, *Open Conversations: Strategies for Professional Development in Museums* (Chicago: Field Museum of Natural History, 1988).

13

Making Words and Images Work Together

One of the most important and difficult things to achieve with interpretive labels is getting reading and visual nonverbal experiences to work together—on the label and in the exhibition. Reaching this union is accomplished by an iterative (repeating, cyclical) process of word selection, image selection, word modification, and nonverbal content modification.

Different kinds of nonverbal images, visuals, and experiences accompany labels. They might be illustrations on the label itself, a photo next to the label, the objects or artwork referred to by the label, or a combination of all these. Even though a label may not have any images on it, the things around it are "images" that visitors will see and experience as they read the label—and those things need to be referenced by the label in some way. Label texts should also take account of images produced by image-triggering sources, such as sounds and smells. An image might also be a feeling.

Images created by three-dimensional objects are the most powerful attractors. Labels next to an object will be read more often than labels next to a photo, or a label alone on a wall. But the visitors' experience will not be complete or memorable if, once attracted by the object, their interests or questions (even just casual curiosity) are not addressed by the label.

Without any references between what the words say and what visitors see, the label is in a vacuum. When there is no connection between what the visi-

tor sees, feels, smells, or hears and what the words are about, the label is less likely to be read and comprehended.

The label's words and what you are seeing and experiencing must work positively together toward the same objectives because, if they are not working together, they are either competing with or distracting from each other.

INTEGRATING VERBAL AND VISUAL CONTENT

Everything in an exhibit or on a label has content, whether intended or not. Images that do not support the words are not neutral. Superfluous content or design is distracting. The same goes for adjunct artifacts or props. Exhibit developers should resist the temptation to add visuals and physical structures just for the sake of ambience, because visitors cannot easily sort out ambience-only elements from message-bearing elements in exhibitions. When all the content is purposeful and integrated, the exhibit communicates more effectively.

A common mistake in exhibit design is to use an image with text because it is available, not because it is the best one to tell the story. To avoid this problem, exhibit developers should overresearch and overcollect the number of images, so when one turns out to be unavailable, another suitable one will fit in its place. If copy has been written first, and the image to be used is not the first choice, make sure that copy is modified to make them go together.

"Going together" means that the words inspired by the visuals are the same words, in the same logical order, as the written text. For example, the *two basic shapes of dinosaur eggs* words, the two-sided case, and the round and oblong eggs on exhibit support each other nicely. If the case was smaller and only contained one example of each shape, the experience would be much less convincing.

PLANNING AHEAD AND EVALUATING

Quick front-end tests are a good way to try out illustrations or words with visitors so that writers and designers can make choices that will fit with visitors' prior knowledge. If eight out of ten visitors think of malaria when they see an image of a mosquito, exhibit planners can feel confident that those two parts (the mosquito image and the word *malaria*) will resonate in visitors' minds.

You may think that this is being fussy, but average stay time per unit of space in exhibitions is only one minute for every three hundred square feet,

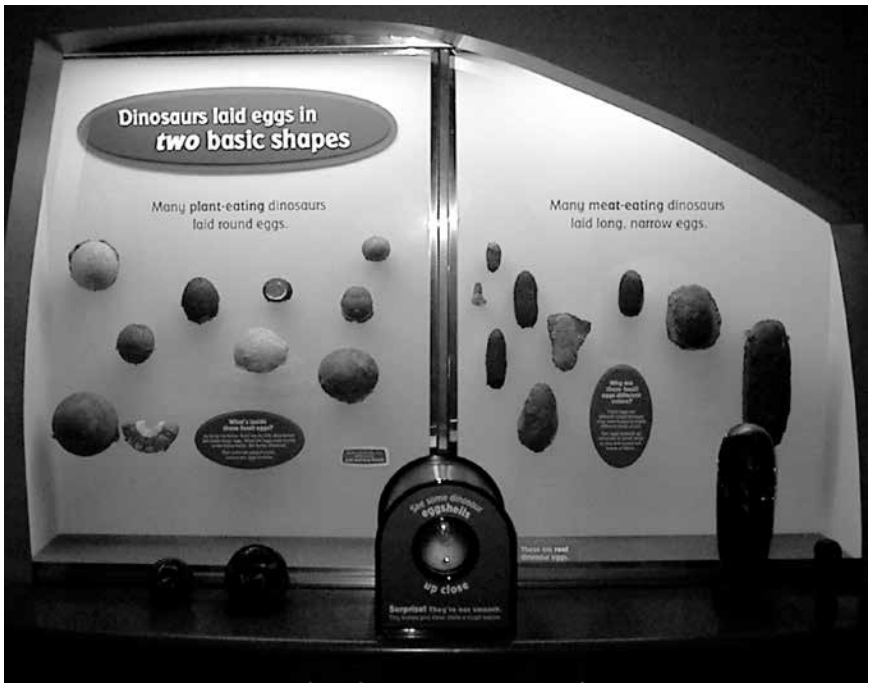


FIGURE 13.1
The words, the multiple objects, and their placements in this deceptively simple, uncluttered case give precision to the generalization stated in the main text: Dinosaur eggs come in two basic shapes.

which implies that visitors are not focusing on very many things for very long.[1] Every microsecond counts. If something does not make sense to people in the first few moments, it is likely to be ignored, or if only a brief second or two is spent, it is likely to be forgotten. For visitors to make meaningful connections with exhibitions, they must first find something that makes sense to them (in any form, e.g., words, pictures, sounds, smells), then combine that familiar thing with a new piece of information. The right words and images, working together, can forge those links.

One of my favorite exhibits is the human body slices at the Museum of Science and Industry in Chicago. There is only one label that introduces the exhibit, answers visitors' most common questions, and recognizes their feelings. The language is straightforward and frank:

Anatomical Sections: Windows into the Body

These unique displays present a rare look inside the human body. They contain actual horizontal sections from a man's body and vertical sections from a woman's body.

These sections were prepared in the 1940s from a man and a woman who died of natural causes. Their bodies were frozen and cut into 1/2 inch sections with a power saw. The sections are preserved in a solution of chloral hydrate, glycerin, potassium acetate, and water.

Although the exhibit may make you feel somewhat uncomfortable, take advantage of this rare opportunity to view at close range the unseen sections of the human body.

The body slices are displayed in multiple windowlike frames that are positioned at right angles to a short wall. The words *windows*, *sections*, and



FIGURE 13.2
Body slices at the Museum of Science and Industry (Chicago) is an old and very popular exhibit. These displays appeal to all ages, speak a universal language and are loaded with emotion.

anatomical resonate with the physical layout and content; the words *frozen*, *power saw*, and *preserved* cut to the heart of the matter, so to speak.

You might think that sometimes dissonance or a lack of resonance is a good thing. It can be, but evaluation will be necessary to make sure that the questions you hope to raise in visitors' minds with the selection of a dissonant combination of words and images are the questions visitors do ask. If the dissonance simply creates confusion, it will hamper communication, not aid it.

Choosing the right words and images starts during planning and design. Elevation drawings can show the relative positions of all exhibit elements, as will detailed dimensional models or computer-based layouts of exhibitions. But it only will be complete when you have actual context—when the final placement and the environment of the labels are known. Throughout the process, check and check again to see

- if the label directs readers to look "on your right," is the object actually there?
- if the illustration shows the artifact from the front, will visitors see it that way, too?
- if the label makes a comparison with another object, is it clearly visible from where the visitor is standing?
- if a smaller type size would be appropriate for a panel's heading, given the reading distance in a narrow hallway, even though all headings were specified at 72-point type?
- if a larger type size is needed, given that the label ended up in the back of a deep case, even though all captions were specified as 20-point type?
- if one artifact had to be substituted for another at the last minute, does the label copy still match?

While drawings and models can help with planning, the context will only be complete after the exhibit opens to the public. Then everyone can see what things are influencing each other. Time and money allotted for fine-tuning the relationship between words and images after opening will be well spent.

If you cannot wait until after opening, use the semifinal design phase, before the exhibit opens, to review and edit labels in context. At this stage, important last-minute changes to enhance the resonance between words and images can be made, even though visitors are missing.

At the very least, label writers should be writing to fit elevation drawings of exhibitions, where they can see what is next to the labels and imagine how visitors will approach the spaces. What artifacts or visuals are nearby can profoundly influence a label's ability to catch visitors' attention and satisfy their most immediate questions.

AN ITERATIVE PROCESS

The old linear process—in which the writer writes the text, hands it over to the designer to design, who then hands it over to the fabricator to produce,



FIGURE 13.3
Text, photos, furniture, and books powerfully convey inequality. This exhibit was part of *Courage* at Levine Museum of the New South.

who then hands it to the installer to put it all in place—results in multiple missed opportunities to fine-tune all the parts and make them reinforce each other. If only one person is wearing all the hats, the fine-tuning will happen inside that person's head. But most exhibitions are planned and built by more than one person, and the chance to make images and words work together needs to be scheduled in as a series of iterative steps. A back-and-forth series of refinements results in a better product.

THE WONDERFUL WORLD OF FREE ART

If there is no budget for original art production or for color photographs from a photo stock house, look online for the myriad of topics and sources of free, uncopyrighted images that reproduce well. The digital age has ushered in numerous websites dedicated to free or low cost art and photographs. Stock photos can be found online at outlets like istock and Shutterstock. Free images can be found on sites such as Open Clip Art, Flickr Creative Commons, and Wikimedia Commons. These sources have varying restrictions for use, however, so it is important to be clear about copyright before obtaining a "free" image. It is no longer necessary to photocopy, scan, or cut and paste images from a book, although this certainly can be done as well.

GENERALIZATIONS REQUIRE MULTIPLE IMAGES

Museums are great places to make generalizations, but we should be helping visitors reach more of their own instead of making them for them. By giving visitors more images to work with, we offer them the experiences they need to come to conclusions that build on what they know already. Too often, exhibit labels provide generalizations or conclusions that are not well supported.

Words and images do not go together when the text makes a generalization and the image or experience provides only one example. To make a generalization requires a set of at least three examples. Visitors tend to see one example as a case study; two examples don't allow the viewer to make enough comparisons to be convinced; but three examples show enough variability to provide viewers with knowledge that can be used in another situation, and that is the purpose of generalizations.

If the museum does not have three real examples, it can use models or photo supplements. Without three examples for visitors to examine on their own, they must take the label writer's word for it—which creates an information-centered, one-way presentation, not a visitor-centered experience.

Making a generalization through multiple experiences with objects can be seen in the photo of *Seeing Individual Differences* (see Figure 6.3), showing multiple examples of masks, figurines, and rattles. Even without any hands-on interactions, seeing multiple examples is one of the best ways for people to learn something new or have prior knowledge reinforced in a new way, and museum exhibitions can do this really well.

In the best of all possible situations, when images and words are working well with each other, the words and the images will together create a complete experience that neither one could do alone. When visitors read and look, or look and read, the result is a gestalt that leaves the visitor feeling that the effort was worthwhile—they got something more by doing both—even if it only took a total of ten seconds.

START WITH SPECIFICS

Start with what you can see and build toward a generalization. Compare the two alternatives for writing the label below. The first starts with a generalization. The second one, in two sentences, goes from the specific to the general, more in tune with the visitors' experience of a singular object:

Bulla (Pendant for Holding Charms)
Worn around the neck by adults and children, bullae contained charms to repel evil.
—text makes a generalization based on only one object

Pendant for Holding a Charm (Bulla)
The charm held in this pendent, called a bulla, was to repel evil. People of all ages wore bullae.
—first sentence is specific; second one makes a generalization

The second version of the text also introduces the unfamiliar term by linking it with a familiar word, and then gives its plural form more in context.

The next example makes a generalization based on one example, but in a way that moves from the specific to the general and makes use of visitors' prior knowledge of the concept of fossils:

Fossil Nautilus
Fossils are our record of ancient days

A hundred million years ago, this nautilus
and its kind swam the seas of northern California,
along with hordes of ammonites.
When the animals died on the sea floor,
their shells filled with mud. Mud turned to stone
and the shells dissolved, leaving these molds.

IMAGES AND WORDS IN THE ENTIRE EXHIBITION CONTEXT

On a broader scale, images and words need to work together in the whole exhibit, not just on individual labels. The graphic look and feel of the exhibition need to harmonize with the total environment and big idea.

All too often, a discordant situation results when exhibit planners attempt to make a serious subject more "fun" through using such techniques as playful, cartoon-style images to convey complex, scientific information. I believe that this false combination trivializes the information and is misleading to visitors. A "science arcade" or a "circus" setting creates expectations that are not in harmony with the mood and mind-set required of visitors to engage successfully with complex information, experiences, and interpretations of scientific phenomena in a way that will truly lead to increases in science literacy.

We need to pick our metaphors carefully. For example, exhibit developers planned to use a roulette wheel as a gambling metaphor for taking risks with unsafe sex and HIV. In a prototype test of the element, a visitor talked about how he did not think roulette was an appropriate metaphor for AIDS risk. He said, "My brother died of AIDS, and this isn't doing it for me. It's more than a game—it's a chance, but not a game. You get death, not forty bucks." Visitors deserve respect, and they will appreciate exhibits that are not trivial. Science museum hype—that you will have so much fun playing with the exhibit that you won't even realize that you are grasping basic scientific principles—is just that, hype.



FIGURE 13.4
Peek into the rooms to see real (dead) cockroaches, silverfish, termites, and other indoor fauna, each with only about 15 words of text. This is a good example of situated copy, at the Natural History Museum of Los Angeles County.

Other discordant situations occur when the materials or colors are selected for visual impact rather than as an integrated part of the overall communication goal. For example, in an exhibit about recycling, you would probably expect the paneling of the exhibition structures—including graphics and labels—to be constructed out of recycled materials, not glitzy steel and neon.

More than once I have heard label writers complain that designers sabotaged their words with poor choices of materials, colors, images, placement, size, or other factors that affect the mood and atmosphere in ways that contradict and distract from the efficient and effective communication of interpretive messages. In the end, it is the visitors who lose. This situation will continue to occur, unfortunately, as long as the label-writing process is separate from label and exhibition design. Writers and designers must work together and share the same goals.

Images and Icons Working Together

In the attempt to reach non-English-speaking audiences in museums, the use of icons or symbols has become more popular, especially with orientation and wayfinding labels. Standard icons are used to identify visitor information, hiking trails, and restrooms by the Department of Interior for parks, forests, and public property.[2] Only a few icons, however, are truly internationally comprehensible.

Symbols, graphics, and icons invented for specific use in one museum will be unfamiliar to the majority of visitors, not just non-English speakers. An evaluation of an old wayfinding system at Brookfield Zoo found that only seven of forty symbols were unambiguous.[3] Original and unique iconographic labels may win graphic arts awards from other designers, but they don't win any prizes from visitors for clarity.



FIGURE 13.5
If you are using images or icons instead of words, are you sure the icons will be decoded accurately by all of your visitors? Adding words to the icons would raise the odds.

Icons should not be used alone. Words are needed to help reinforce, clarify, and decode the image. The best way to find out if an icon works is to test it with a sample of visitors and make changes until it does.

Making images and words work together requires knowing what the images and words are going to be far enough in advance so that adjustments and fine tuning can be done to make sure they match. Waiting until the last minute, or handing the process off in a linear fashion from writer to designer without back-and-forth consultations, can lead to problems. When the images and words also involve some form of interactivity, the job can be even more complicated, as we will see in the next chapter.

NOTES

1. Beverly Serrell, *Paying Attention: Visitors and Museum Exhibitions* (Washington, DC: American Association of Museums Press, 1998); Stephen Bitgood, *Attention and Value: Keys to Understanding Museum Visitors* (Walnut Creek, CA: Left Coast Press, 2013).

2. Suzanne Trapp, Michael Gross, and Ron Zimmerman, *Signs, Trails, and Wayside Exhibits: Connecting People and Places*, Interpreter's Handbook Series, no. 4 (Stevens Point, WI: University of Wisconsin-Stevens Point Foundation Press, 2006).

3. Beverly Serrell and Hannah Jennings, "We Are Here: Three Years of Wayfinding Studies at Brookfield Zoo" (proceedings of the American Association of Zoological Parks and Aquariums, Oglebay Park, West Virginia, 1985).

14

Labels That Ask Questions

The best questions in labels are the ones visitors themselves would ask.

You have probably heard that it is a good idea to ask questions in exhibit labels to stimulate visitors to think, look, get involved with, and learn from your exhibits. While asking questions may be a good idea, it is important to recognize that there are good and bad questions.

The best questions are those that visitors themselves ask. Two ways to learn what those questions will be are by watching and listening to what visitors say to each other when they look at exhibits in existing situations, or by doing front-end evaluation or testing mock-ups with visitors during the development of exhibits before final design. The first is the most natural way, because visitors are acting spontaneously and the exhibit is in context with all its parts. For example, "Is he dead?" visitors ask at the snapping turtle's tank, as they observe the huge, mossy turtle that rarely moves.

Unfortunately, most questions asked in labels are not really questions at all. They are mock queries, because the asker (the writer, curator, exhibit developer, designer) is simply disguising the delivery of *more information* in a superficially user-friendly form. These questions are gimmicks and are not good pedagogy, especially when they are used on labels that accompany static displays of objects, artifacts, animals, or photographs. A question that does not flow easily from the visitors' interest can feel like an imposition. A ques-

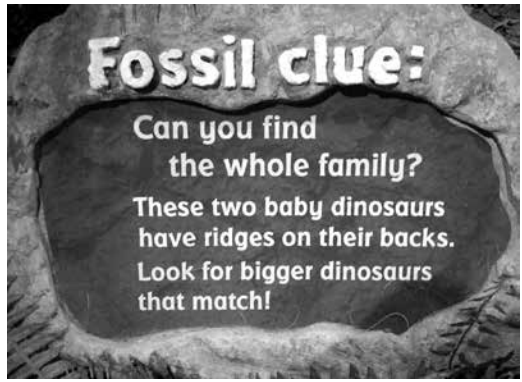


FIGURE 14.1
These labels—one of many fossil clues—promote active looking and reiterate the big idea throughout the exhibition at the Children's Museum of Indianapolis.

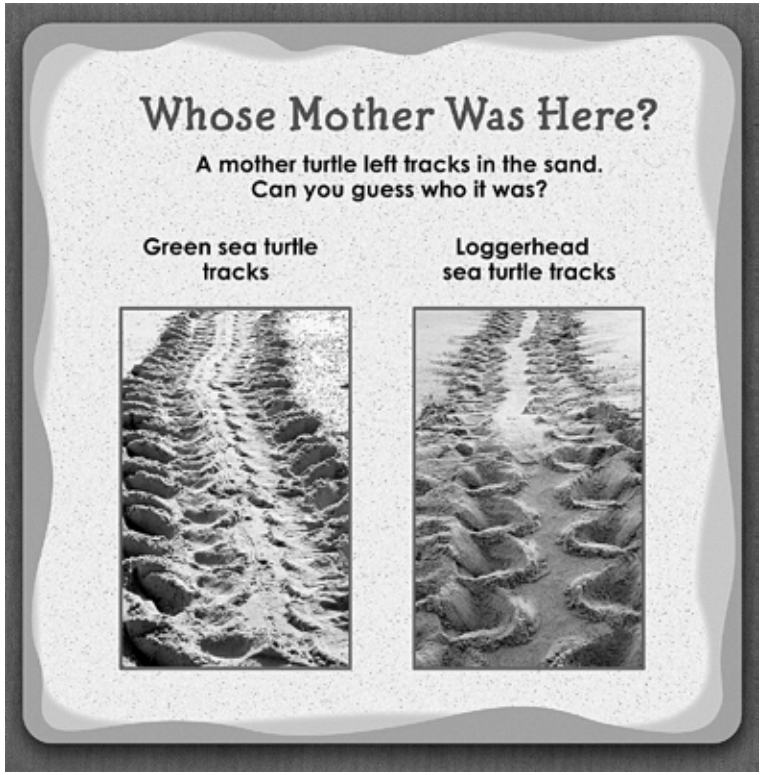


FIGURE 14.2
This label at Brevard Zoo in Florida asks readers to look and compare. The answer is in the actual sand nearby. Our brains are hardwired for pattern seeking, so activities like this are fun to do.

tion that cannot be easily answered by looking at the objects can be frustrating. And one with an obvious answer is offensive.

At the Children's Museum of Indianapolis, the dinosaur exhibition's big idea is about how clues found in the ancient bones help you learn more about how dinosaurs lived. A repetitive use of questions is surprisingly not boring because the queries are based on looking at the exhibits to find the answers, which keeps adults and children alert and curious.

THE DREADED "DID YOU KNOW?" QUESTION

If all the flip label is asking is "Did you know?" and covering up more information, forget it. Yes, they are very popular, but they are empty calories



FIGURE 14.3
Skip the "Why?" and the "Did you know?" questions. Use questions that promote more thoughtful, integrated, and competency-reinforcing actions on the visitors' part.

in terms of what visitors get out of them, and cheap in terms of the effort it takes for label writers to come up with them. Along with "fun facts," they can be distracting from the big idea, and insulting. A visitor's answer to "did you know?" is most likely "No," which puts the reader in the spot of feeling dumb rather than curious, and puts the writer in a superior, know-it-all position. This is not being visitor friendly.

THE DREADED "WHY?" QUESTION

A "Why?" question is a particularly obnoxious form of the mock query. For example:

- Why do birds form feeding cooperatives when food is in short supply?
- Why is Japanese armor lightweight?
- Why are insects commonly found in virtually every environment except the oceans?
- Why did volcanoes occur in Missouri during the Precambrian?

These questions imply one right answer, known by the expert, that is not visible or apparent to the visitor. These are not visitors' questions, and their answers might rightly be, "I don't know," "Who cares?" or "Because God made it that way."

The four examples listed above could be rewritten into different questions or made into statements that more honestly reveal the asker's intentions or values, such as:

- The advantages of a feeding cooperative for birds when food is in short supply are . . .
- Japanese armor is lightweight, because . . .
- Are insects commonly found in the oceans?
- What factors made volcanoes possible in Missouri?

If the point of asking the question is to make visitors see a comparison, think about an issue or explanation, or understand the purpose of a structure or design, just say so, such as, "The three factors that made volcanoes possible in Missouri were . . . "

GOOD "WHY?" QUESTIONS

Although I would strongly caution against using a "Why?" question, there are two conditions that make "Why?" questions appropriate: when you are sure that visitors would phrase the question that way on their own, and when discordant, easily seen factors are present, which cause the "Why?" to occur. Usually those two conditions occur together. For example:

> Why don't the sharks eat the fish living with them in the tank?
> —visitors at an aquarium see predators swimming with prey

> Why don't the birds fly out?
> —visitors at a zoo see a free-flight area with birds and no door separating the area

> Why were these [dinosaur bone jackets] never opened?
> —visitors in natural history museum see large, white, plaster-of-Paris, unopened bundles with numbers painted on the outside

> Why do they call this art?
> —visitors in an art museum see a room full of gaudy looking chairs, clocks, tables, and tapestries of the decorative arts collection

These are real questions asked by real visitors.

Being able to anticipate what visitors want to know and in what order they want to know it—that is, which questions need to be answered first—can be achieved through a combination of experience, intuition, common sense, and trying it out and fixing it if it does not work right the first time.

If you decide that you have to use a "Why?" question, or any other question, it's usually a good idea to answer it in the first sentence of the next paragraph of the label, in one short statement. It is very frustrating to visitors to have their curiosity aroused and then not be able to find or confirm the answer because it is not there, or it is difficult to find because it is buried in the text somewhere twelve lines later.

The information in this chapter so far refers mainly to questions asked on labels in static or nonparticipatory exhibits. Questioning techniques used for labels on interactive exhibits present a different challenge, which is described in the next chapter. Before going on to that discussion, we need to look at three other types of labels that share characteristics of static and interactive

elements—flip label questions, open-ended questions, and talkback questions.

QUESTIONS ON FLIP LABELS

Labels that flip up, slide, or rotate (with text and/or images on a surface that is revealed) are common, inexpensive, popular devices in museum exhibitions. Also called "flappers," they offer visitors something to do—the overt, physical

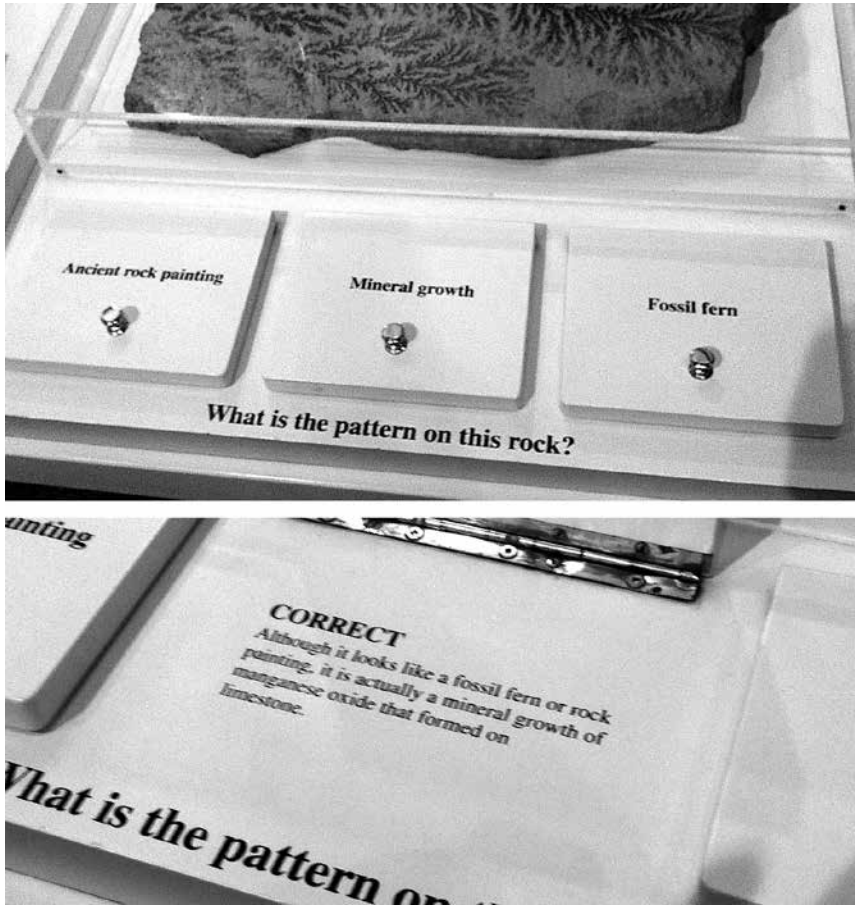


FIGURE 14.4
Ancient rock painting, mineral growth, or fossil fern? The answer to the question under the flip-up cover should be short, not an opportunity for adding lots more information.

action of lifting or sliding the panel—and thus are referred to as interactive or hands-on labels, although the amount of interaction is typically minimal. Depending on what information is on the flips and what visitors can do with them, there can be more interaction.

Integrated, engaging flip labels will give visitors a logical sense of anticipation, a more compelling reason to look under the label, and an intrinsic reward for doing it, such as:

- to peek at something hidden, such as a graphic of a desert with flip labels hiding pictures underneath that show "What lives underground?"
- to confirm an answer to a question and find something else, too. For example, the flip label asks, "How heavy is a hippo?" and underneath is not just the number of pounds, but also a cartoon of kids piled on one end of a seesaw, with a caption that says, "As heavy as eighty 12-year-olds."



FIGURE 14.5
The big brother is holding down the top of the flip label, making his little brother read and try to guess the answer. If the flip label's question and answer are compelling, you might see this evidence of engagement.

- to convey different points of view, such as having a question with two different answers; for example, "Yes, because . . ." and "No, because . . .", neither one the "right" answer.

The best flip labels reveal something other than text. For example, flip labels can be installed over small, wall-mounted cases with clues, rather than questions, for how objects were used. "It was buried with an Egyptian mummy, and it held the mummy's guts" and lift the label to reveal an ancient Egyptian canopic jar, or "This is used for carrying things, and it helps a woman balance and hold things on her head" and lift to reveal a woven African head ring.



FIGURE 14.6
What's underneath? Lift the hem of the skirt for the answer. It's a rare and fun opportunity to touch a dress at the Chicago History Museum.

Finding a real thing is much more exciting than more text, such as, on a large panel, a silhouette of a muscular male is partially covered by three flip labels that say "THYMUS GLAND," "BONE MARROW," and "LYMPH NODES" in large, comic book-style letters on labels that are flip doors. The implied question is, "What is behind this door?" Open the door to reveal, underneath, EEK!—a real (preserved) human (?) thymus gland. And EEK!—a real leg bone, and, . . . well, I was afraid what I'd find under the lymph nodes label, so I didn't look.

Flip labels are very seductive. Visitors can hardly resist peeking under a flap to see what is there. With children, the activity of lifting is satisfying by itself. For adults, the manipulation is time-consuming and requires effort. Is it worth it, the adult visitor might ask? If a question or statement posed on the outside of a flip label seems difficult to an adult, it can make them feel stupid. For example, on the outside the label says, "When you are done comparing the two artworks, lift the sheet for more information." As one visitor rephrased it, "Lift the sheet and find out how dumb you are."[1] If you're going to take advantage of visitors' natural investigative behavior, make sure the payback is commensurate—useful, interesting, enjoyable, memorable discoveries underneath, not just more words.[2]

OPEN-ENDED QUESTIONS

Most of the questions discussed above have an answer that is usually found in the information in the label or the exhibit, and there is usually just one right answer implied. Open-ended questions are answered by the reader.

Well-done open-ended questions will prompt visitors to think about their own prior knowledge and experience and construct or retrieve a thought that is their own personal creation. For example, wayside signs at the Cincinnati Nature Center incorporated open-ended questions along with text and graphics about the view from spots along the nature trail. Using a little icon graphic to set them apart from the rest of the information, the questions asked included: "What can you sense when you close your eyes?" (on a panel titled "Feel the Field"), and "What changes has your body gone through in life?" (on a panel titled "It Takes Time to Grow Up" about the life cycle of frogs in a pond).

But these questions can be tricky. An open-ended question can make visitors feel stupid if they can't easily answer it or mistake it for a closed-ended question where there is only one right answer.



FIGURE 14.7
Open-ended questions—like this one on an outdoor panel at the Cincinnati Nature Center that asks, "What can you sense when you close your eyes?—don't have a right or a wrong answer.

QUESTIONS ON TALKBACK PANELS

Probably the oldest form of talkback—inviting visitors' input in a museum exhibition—is the comment book at the end of the gallery where various scribbles, serious and otherwise, are recorded. Comment books are another form of label, totally uncurated. Anonymous writers are usually motivated by extremes of good and bad feelings or, for younger authors, mischief. And who reads the comments? Other visitors, maybe the curator. Reading the random remarks, which range in issues and tone, from thoughtful praise to naughty pictures, can be a mixed experience. Occasionally a researcher attempts to make sense out of the input. They are excellent fodder for a museum studies student's analysis.

Questions posed and opportunities for adding responses now commonly come in the form of a talkback panel. Visitors post their sticky notes or 3 x 5 cards or illustrations to the mix, and other visitors look at them. Maybe they

get culled occasionally by a staff person, and maybe are skimmed, counted, or just filed away.

The questions asked by the exhibit developers should be ones they care about the answers to. Visitors are more likely to post thoughtful, untrivial answers when the questions are not trivial. Answers in the form of pictures drawn by visitors can be powerful, like art often is.

In an exhibition about the San Francisco Bay, the subject of the Bay Bridge was shown in photos, objects, and text. A talkback station invited visitors to consider their feelings about the old and newly built bridge by writing a postcard. The label for the talkback said:

> Reflections on Crossing the Bay
> Did you know the first Bay Bridge was built in 1936?
> Now that there's a new Bay Bridge, the old one will soon no longer be used.
>
> Old Bridge / New Bridge . . . What does it mean to you?
> Write a postcard and take it with you—or leave it for others to read.

In another section of the same exhibition, a label asked you to imagine the transportation technology of the future.

> How would you like to get across the Bay in the future? Would you travel suspended above the water? Or submerged below the water? Or in a taxi-boat or hydroplane that travels on top of the water? Draw it!

The creativity and range of ideas posted by visitors was a great source of enjoyment and discussion for others.

Another good idea from Louise Pubols, history curator at the Oakland Museum of California: "I also think we get a great response from the Depression section, which had just short questions but set up a debate with quotes from the era. Lots of context gives people more to respond to."

Talkback bulletin boards are an easy way for a museum to encourage participation, and the quality and meaningfulness of the feedback can be raised to a higher level by making the solicitations reflect the context and content of the exhibition in a meaningful way. Good questions will prompt good answers.



FIGURE 14.8
"Can you design a city in harmony with the natural conditions of the bay?" Another form of the talkback question is the draw-it question. Visitors' drawings are attractively displayed at the Oakland Museum of California.

For ideas about user-contributed content beyond comment books and sticky notes, see *Visitor Voices in Museum Exhibitions* by Kathleen McLean and Wendy Pollock.[3]

NOTES

1. John E. Schloder, Marjorie Williams, and C. Griffith Mann, *The Visitor's Voice: Visitor Studies in the Renaissance–Baroque Galleries of The Cleveland Museum of Art 1990–1993* (Cleveland, OH: The Cleveland Museum of Art, 1993), 31.

2. Bitgood's attention-value model applies strongly here. See Stephen Bitgood, *Attention and Value: Keys to Understanding Museum Visitors* (Walnut Creek, CA: Left Coast Press, 2013).

3. Kathleen McLean and Wendy Pollock, ed., *Visitor Voices in Museum Exhibitions* (Washington, DC: Association for Science-Technology Centers, 2007).

15

Labels for Interactive Exhibits

Labels for interactive exhibits need to be customized so that they respond to and serve the specific design of the interactive and the way visitors use it.

Many professionals in the museum field have addressed the specifics of what constitutes an interactive exhibit. In her book *Planning for People in Museum Exhibitions*, Kathleen McLean distinguishes among "interactive," "participatory," and "hands-on."[1] She chacterizes interactive exhibits as "those in which visitors can conduct activities, gather evidence, select options, form conclusions, test skills, provide input, and actually alter a situation based on input." The Exploratorium's Josh Gutwill and Sue Allen are more broad: "At the heart of interactivity is reciprocity of action, where a visitor acts on the exhibit and the exhibit reacts in some way."[2] Regardless of how interactivity is defined, all exhibits that require physical input from visitors—lifting a flap, pushing a button, or engaging in a multistep exhibit experience—also require carefully considered labels.

Texts for interactives must guide visitors' activities, often in a required sequence, and explain what is going on. Poor label texts will fail to compete with visitors' impulses to *do* rather than *read*.

INFORMAL SCIENCE WRITING VERSUS LABEL WRITING

In a science museum exhibit about imaging, visitors were supposed to look into a tube and see an image of their eye reflected in a magnifying mirror. The label, which contained instructions and explanations, said:

> The Peerless, Priceless Imaging Tool
>
> This device is unrivaled for imaging in the visible light spectrum.
>
> Look through this tube to see the most sophisticated imaging tool in existence: the human eye. Much like a camera, the eye adjusts to different light levels and focal distances. When united with the interpretive ability of the brain, the eye far surpasses any imaging machine ever built. However, unaided, it can only see in the narrow visible light portion of the vast electromagnetic spectrum.

This is excellent *science* writing, but it is not good *label* writing because it lacks resonance with the context in which the interactive device will be used by visitors. It is not responsive to the order of events in which visitors experience the interactive. It tries to dominate, or to be, the visitors' experience by providing lots of important, complex scientific information. The vocabulary is too sophisticated for visitors' needs in the complex exhibition environment. It is more appropriate for writing meant to be read for the sake of the words and ideas themselves, without competition from the noise, distractions, and other concepts surrounding this one interactive device. Interactive exhibits need shorter, more-to-the-point labels, ones that aid and support the visitor's own scientific exploration and thinking, however brief that might be.

THE EXPLORATORIUM MODEL

A format for interactive labels was developed years ago at the Exploratorium in San Francisco. The labels contain four sections, telling visitors "What to do" and "What to notice," and asking the questions "What's going on?" and "So what?" The labels also include a title and, often, a tagline, which help call out the interactive opportunities of the exhibit and are easily distinguished from the "more information" content.

This style and variations of it have been adapted and used by many other museums across the country and around the world. In its longest form, the

format provides plenty of room to explain, in detail, the scientific or technological background for the interpretive element, thus fulfilling the exhibit developer's desire to present knowledge.

The example below is a very short version of an Exploratorium-style interactive label for the same eye-imaging exhibit mentioned above:

What to do:
Look close up into the tube.
What to notice:
You can see your eye, greatly enlarged in the mirror.
What's going on?
Your eye is the best, most powerful, priceless imaging tool.
So what?
Even though thousands of dollars are spent on high-technology imaging tools, your eye is still the best.

This organization of information is logical, linear, and systematic. It can be applied to any type of interactive exhibit, and it provides an easy, "off-the-shelf" design format. This format has been widely copied, assuming effectiveness. Until recently there had been little written about how well this model served visitors.

The main criticism of this formulaic style of labeling is that it is typically not responsive to the different physical layouts, components, and conceptual challenges specific to every individual interactive exhibit. It assumes an "empty-headed receiver" role for the visitor's participation—visitors are told what to do before they are given any reason to perform the action. In addition, the design format (the four sections) dominates the label content and denies the opportunity to emphasize the information graphically. The lead-in words (e.g., "To do") are too prominent and redundant.

In recent years the Exploratorium's Department of Visitor Research and Evaluation has conducted extensive research on its interactive labels.[3] In "Label Lessons Learned," evaluators conclude the following:

- Visitors like labels that pose challenges in the form of questions (Can you get two objects to float in the airstream?) along with suggestions or hints (Try using the whiffle balls.).

- Deemphasizing the explanation or reducing its overall length can increase the amount of time visitors spend in active investigation.
- Titles that clearly frame the experience help visitors understand what the experience will be; for example, "Watch Water Freeze."
- Headers help visitors scan a label for the information they need.
- Shorter labels are read more thoroughly than longer labels.
- Diagrams, which illustrate visitor interaction with the exhibit, help visitors figure out what to do.[4]

A move to a new location gave the Exploratorium an opportunity to rewrite nearly all the exhibit labels. Based on the research, writers kept the basic original format the same, retaining information related to "how to do it" and "what's going on," but they also allowed for variation based on the individual exhibits.[5] For instance, steps are only numbered if those steps must be done in a particular order to achieve the exhibit experience. And some labels were



FIGURE 15.1
A line drawing at the Exploratorium shows the correct position for how to place the balls. These "use diagrams" support and clarify the words.

amended with illustrations to help visitors get started. "Use diagrams" work better than photographs because they single out and focus on the most important information. Photos include lots of extraneous "noise" from other content.

At least one Exploratorium exhibit received an entirely new label approach. Audience research revealed that *Light Island*, an open-ended exhibit that allows visitors to experiment with different behaviors of light, offered too many interactive options that simultaneously vied for visitors' attention.[6] The traditional "to see, to do, to notice" label didn't fit with the logistics of the exhibit's design. Exhibit developers changed the shape of the exhibit—from a round table with a light source at the center to an amoeba-shaped table to provide users with their own space to conduct their investigations. The new shape also increased the perimeter of the exhibit, giving more overall room for visitors.[7] The new label has a title, tagline, and six questions around the edge of the table, an excellent fit for the design.[8]



FIGURE 15.2
The successful placement of the labels (in the center and on the inside edges) on the *Light Island* interactive at the Exploratorium was the culmination of years of redesign and testing.

Light Island
Play with beams of light.

Can you separate white light into colors?
Use the reflectors to bounce a light beam all the way around the central light source.
How many times can you bounce a light beam?
Try to "draw" the letter *W* with light rays. What other shapes or letters can you make with light?
Try mixing the colors. Can you make yellow light?
Can you get the light beam to focus—that is, come together to a point?

BEYOND THE OLD EXPLORATORIUM MODEL

As the Exploratorium research demonstrates, interactive exhibit instructions, questions, and explanations need to be responsive to the individual design and content of the specific interactive. In certain exhibitions, a formula might work to present the different parts of the label, but in others a formula might prove to be too rigid. The words, the visitors' actions, the physical mechanisms, and the exhibit developer's intent need to mesh.

In a short paper called "From Hands On to Minds On: Labeling Interactive Exhibits," Minda Borun and Katherine Adams of the Franklin Institute in Philadelphia recommend a promising approach.[9] They tell of a case study of multiple attempts to get visitors to challenge their own assumptions about a commonly held misconception about gravity. They reported, "We learned to look at a label in terms of relationships. The label that worked created a new dynamic between itself, the visitors and the device." Instead of just telling visitors information, the new label fostered a dialogue that got visitors to think about their own assumptions in a new way.

Borun's approach was used in a formative evaluation to test and improve four mock-ups of interactive exhibits for *Imaging Science* at the Museum of Science and Industry in Chicago. The wording in the prototype labels was changed to promote a more active visitor role, to link the visitors' actions to the device's phenomenon, and to help them anticipate and formulate meanings. The labels asked a question rather than delivering information. By making the interrogative integral to the visitors' experience, using the interactive became synonymous with communicating the exhibit's main message.

In other words, doing and understanding the experience became interdependent and mutually reinforcing. For example:

What tool is the best, most powerful,
priceless imaging tool?
Look close up into the tube.

When the label invited visitors to try the interactive and to answer an explicit question at the same time, comprehension improved. Visitors' understanding of what the exhibit was about went from 27 percent (when using the old Exploratorium-style label) to 67 percent (using the one shown above), and visitors' descriptions of the exhibits during evaluation interviews were much more appropriate and accurate when this new style of label was used: "You can have all the machines in the world, but unless you use your eyes to look, you can't tell what it is" and "Technology can see beyond, but you need your eye to understand."[10]

What makes this question strategy work well is that there is something visitors can do other than just reading on to answer the question. The concept brought up in the question encourages the visitor to use the interactive device, and using it answers the question.

Another important advantage to this shorter, more direct style is that it becomes especially easy for parents and teachers to help children use and understand the exhibits by simply reading the question out loud. Intragroup reading out loud is one of the observable behaviors that indicate learning in museum exhibitions.[11]

Below is another example of a rewrite of an interactive label that eliminates a "Why?" question and gets rid of the "to do" in favor of a more dynamic question. Notice the difference between what you can imagine just from the question in the second case compared to the first:

Why is a burr so sticky?
What to do:
Look at the piece of burr and wool under the microscope.
Compare them to the hook and loop pieces of Velcro.
—before, with a dreaded "Why?" question

What do the burr and wool have in common
with the pieces of Velcro? Look in the microscope.
—after, with concept and action incorporated into the question

Although it looks easy, this style of label is much harder to write, because each label has to be individually crafted to include the context of the message, the visitor's role, and the action required. The "formula"—a question followed by a short instruction—is deceivingly simple. As with labeling in general, the best product, in the end, looks obvious, but it can often take more than five drafts, plus formative evaluation to get there successfully.

Here are some drafts of another interactive question written to get visitors to put their hands on a temperature-sensitive wall and see how the warmth in their hands is imaged by the material:

- What makes the panel change colors when you touch it?
- How can you make something change color by just touching it?
- What do the changing colors on these panels show?
- Can you make these panels change color?
- What does heat look like?
- By touching the wall, what can you see that is usually invisible?

Which one do you think works best? The last one contains the prompt for action (touch), where (the wall), what to notice (visible), and a clue about the concept (seeing the invisible). The other five questions lack one or more of these.

PLACEMENT AND PHYSICAL-ACTION WORDS

Besides questions that invite, instruct, and give clues about the nature of the interaction, another important ingredient for labels for interactives is that the label's design and placement must be in the context or proximity of the physical space. Buttons must have labels right next to them, not inches or feet away, and the labels must say more than just "Push." Let visitors know what to expect when they push: "Push to hear owl call" or "Push to release gas."

Below are four examples of how words in interactive labels can echo or resonate with the physical action the visitor sees or does, and how graphics support the words and make a bridge from words to actions and consequences:

- A six-sided rotating wheel contained numbered panels with a sequential story about how the forest changes as it is influenced by fire and by moose grazing on the trees. During evaluations, visitors used words such as *cycle*, *succession*, *progression*, and *sequence* to describe the story.
- The label next to a lever said "Generate electricity," and an illustration showed a hand on the lever. Visitors inappropriately and vigorously pumped the lever back and forth. The label was changed to say, "Hold the lever up until the light goes off," and visitors used it correctly.
- A label next to a fake velvet touchable near a diorama asks, "What's the fuzz on the antlers?" After touching it, visitors were seen pointing at the mule deer buck in the diorama and overheard saying, "That's what his antlers feel like."
- The label for an exhibit meant to convey the unpleasantness of scrubbing a ship's deck commanded, "Get on your knees and scrub!" While they

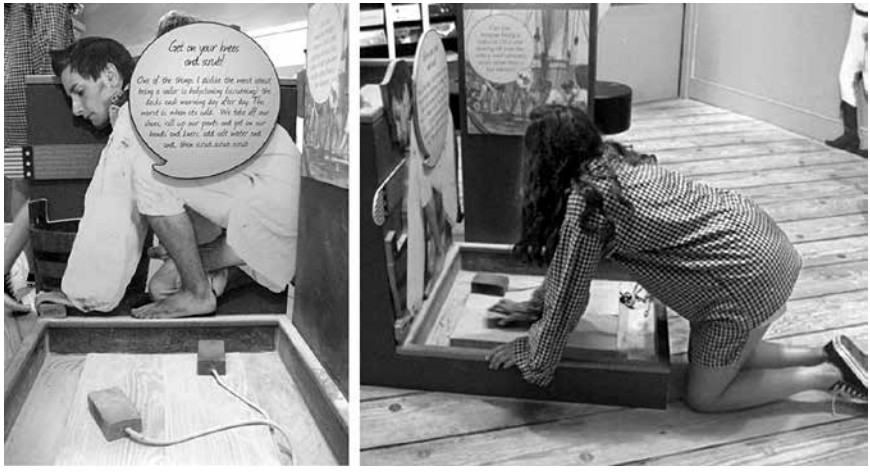


FIGURE 15.3
At the USS *Constitution* Museum*, All Hands on Deck* has compelling and fun interactive exhibits for all ages—a result of much prototyping and experimentation.

were scrubbing, visitors could look up and read a quote from a fictitious nineteenth-century sailor about this miserable task. This activity was so engaging that even teenagers participated!

Visitors read labels very literally. If the label can be misunderstood, it will be. Here are five examples, all of which involved some form of misinformed interactivity, of how things can go wrong, and what could be done to correct the mistake:

- On a gorilla graphics panel at a zoo, visitors were asked a question and told they could find the answer on the back of the bench next to the panel. Visitors read as far as "on the back" and walked around to the back of the gorilla graphic panel. Visitors soon created a little pathway through the bushes that reinforced the notion that the answer was back there. The zoo added the answer to the back of the panel in addition to the back of the bench.
- On a panel at an aquarium about how fish hear, a little silhouette graphic showed visitors how they could hear like a fish by putting their hands over their ears and putting their heads against the panel to sense the sound vibrations through their skull bones. The graphic, however, showed a person standing with his head *almost* touching the panel, with a tiny distance in between. So visitors carefully stood with their heads *almost* touching the panel. The graphic was redone, showing contact between the person's head and the panel.
- On a zoo mock-up of an interactive about swamps, visitors were instructed to "look among the lily pad roots to find small animals living there." Visitors had no problem pretending that the ropes dangling down from the "lily pad" were "roots," but they told the evaluator who was trying out the mock-up that the label should say, "Look behind the roots" because the little animals they were supposed to find were just graphics on the back wall behind the roots. The change was made.
- In an art museum, supplementary information about two paintings was supplied on large, laminated sheets tucked vertically in a pocket next to a bench in the center of the room. The label on the wall next to the paintings said, "Pick up the label near the couch." Few visitors made the visual-verbal connection between the laminated sheets and a label and the bench and a couch in the gallery.

- In a science museum, an exhibit invited two people to sit facing each other, looking through a glass, while at the same time adjusting the amount of light shining on them to create a blend of their reflected images. The label told visitors to sit and "line up their noses." Some visitors responded by mushing their noses together against the glass. "Not only did this make doing the activity difficult, it also left lots of nose prints on the glass," reported the exhibit staff. The revised label showed a drawing of two people sitting with their faces properly aligned and text that read, "Sit so that you and your partner are about the same height." More visitors used it successfully and left far fewer nose prints.

KEEPING IT SIMPLE

As museums incorporate more technology and create complex, in-depth, experiential, immersion experiences, it is refreshing to think about how effective some of the simpler interactive techniques can be. Labels that encourage visitors to do something with their own low-tech bodies can work in a variety of settings, for example:

> Can you find 15 beetles, 7 mushrooms and 2 snakes?
> —next to a natural history diorama

> To make a sound like a whale, hold your nose, close your mouth, and say "OH!" three times.
> —in a marine mammals exhibit

Using your sense of smell evokes strong memories. But keep in mind that everybody does not have the same ability to smell, and some people can't smell at all.[12]

Keep it simple, but it can still be about something complicated, too. A very complicated story about amino acids is elegantly displayed in a curved wall that lists the molecular chains for sixteen different mammals. The label instructs you to compare the molecules. By comparing the chains, you can see the similarities between closely related species. The interactivity is strictly up to the visitor: how many species to compare; how many chains to follow around the wall. Touching the wall with your finger keeps your place.

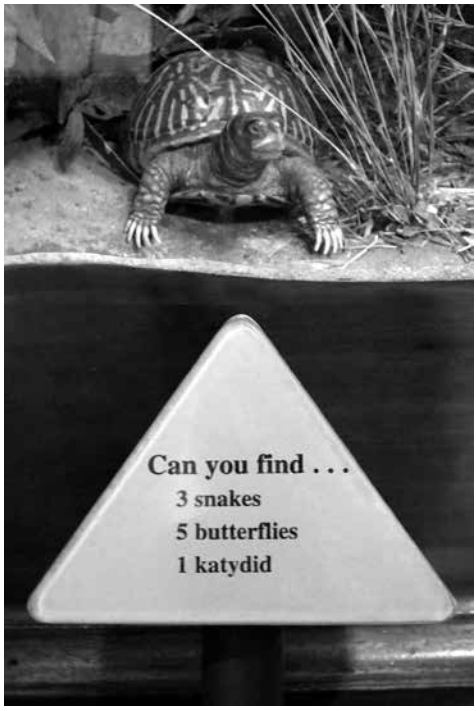


FIGURE 15.4
This simple label for a diorama at the Field Museum's *Nature Walk* asks visitors to find snakes, butterflies, and a katydid. It keeps children or adults actively occupied for several minutes, a long span in museum time.

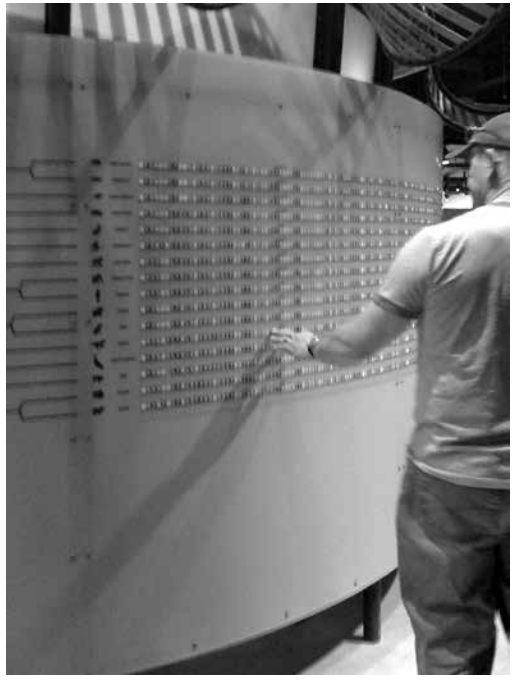


FIGURE 15.5
An interaction can be simple but meaningful. You can tell that this visitor read the label by the way he is tracing the lines on the wall, which is part of the *Life* exhibits at the Utah Natural History Museum.

ALWAYS EVALUATE

Think ahead and anticipate, then mock it up, and test to see where visitors' hands and eyes go when they approach and manipulate the interactive. When reaching over to grasp a lever or push a button, will a person's arm cover up or cast a shadow on the label, making it difficult to see? Will the handle accommodate a child's arm as well as an adult's? Will visitors' eyes go naturally from what's moving to the label that explains what's going on? More than any other type of label, labels for interactivity need to be evaluated. Trying them out, modifying, trying them again, and modifying again will lead to interactive label solutions that get read, are used appropriately, and are remembered.

The suggestions in this chapter have had to do with making words and actions work together in interactive exhibits. The previous chapter stressed this important relationship between words and images in static exhibitions. Some very similar challenges and solutions are presented by electronic media, as we will see next.

NOTES

1. Kathleen McLean, *Planning for People in Museum Exhibitions* (Washington, DC: Association for Science-Technology Centers, 1993).

2. Sue Allen and Joshua P. Gutwill, "Designing with Multiple Interactives: Five Common Pitfalls," *Curator: The Museum Journal* 47, no. 2 (2004): 199–212.

3. The Exploratorium's Visitor Research and Evaluation department site lists many of their research publications on their website: http://www.exploratorium.edu/vre/visitor_research/allVRE.htm. Chief among these are Sue Allen's *Finding Significance* (2004) and Thomas Humphrey's *Fostering Active Prolonged Engagement* (2005). Joshua Gutwill's 2002 article "Providing Explanations to Visitors Affects Inquiry Behavior: A Study of the *Downhill Race* Exhibit" reinforces the notion that providing too much information decreases visitor engagement. These findings are elaborated upon in Joshua P. Gutwill, "Labels for Open-Ended Exhibits: Using Questions and Suggestions to Motivate Physical Activity," *Visitor Studies Today* 9, no. 1 (2006): 1–9a.

4. Joshua P. Gutwill, "Label Lessons Learned" (unpublished report, Exploratorium, 2010). We hope that this document is eventually added to the Exploratorium's visitor research website cited above.

5. Exploratorium, *Design Guidelines: Text for Exhibit Labels and Other Floor Signage* (internal report for eventual inclusion in *Design Principles* handbook, Exploratorium).

6. Allen and Gutwill, "Designing with Multiple Interactives."

7. Email correspondence with Eileen Campbell, August 26, 2014.

8. There is more excellent advice from Sue Allen in her articles "Designs for Learning" and "Designing with Multiple Interactives"; see note 2.

9. Minda Borun and Katherine A. Adams, "From Hands On to Minds On: Labeling Interactive Exhibits," in *Visitor Studies: Theory, Research, and Practice, Volume 4*, ed. Arlene Benefield, Stephen Bitgood, and Harris Shettel (Jacksonville, AL: Center for Social Design, 1992), 115–20.

10. An unpublished study done at the Museum of Science and Industry by Serrell and Associates.

11. Minda Borun, Margaret Chambers, and Ann Cleghorn, "Families Are Learning in Science Museums," *Curator: The Museum Journal* 39, no. 2 (June 1996): 123–38.

12. Beverly Serrell, "Something Smells," *Exhibitionist* 23, no. 1 (Spring 2004): 14–15.

16

Digital Interpretive Devices

With the abundant and growing number of digital opportunities in museum exhibitions, the words on the wall will become even more important.

While I firmly believe that static labels and graphics will continue to play a primary role in affording visitors more meaningful experiences in exhibitions, the digital opportunities are here to stay. May we continue to improve them both. Regardless of the device, advice for written content on digital devices is the same for written labels: be short and sweet, be concrete, do good prototyping and evaluation, use good design, and make sure it's the right medium for the message. A digital device is a tool. Like any other interpretive strategy in museum exhibitions, the device is only as good as its designers make it. It is only useful if it is well integrated into the intended themes and messages of the exhibition and easy for visitors to use as intended.

DIGITAL IMPACTS ON LABELS

What does digital technology mean to labels in educational exhibitions? There are three primary, interrelated impacts: (1) labels will continue to serve the function of the "first option" form of interpretation; (2) labels don't have to be as long; (3) visitors will use more labels, not fewer.

Labels as First Option

Nondigital labels with short, clearly stated ideas, integrated graphics, and beautiful typography located in critical and logical places throughout the exhibition will continue to be the most-used form of interpretation. Digital handheld devices with audio, multimedia, apps, interactive games, video, and links to the Internet serve as important secondary sources of information. Screens—inviting more information, media, games, and more—often take more time and attention than visitors are willing to allocate to them in an exhibition.[1]

Shorter Labels; More Information Available Elsewhere

Nondigital labels offer appetite-whetting, vista-opening knowledge created strategically for their immediate context.[2] Unburdened by the unlimited information available online, labels can be shorter, more succinct, and focused on the experiences, objects, and phenomena at hand. Labels don't need to include less-relevant information or answer all possible questions when visitors can just Google it.

Using More of the Available Labels

We know from observational research that visitors do not use (i.e., stop at, become engaged with) the majority of elements in an exhibition.[3] Even the most diligent visitors don't read everything. If the proliferation of digital devices in our museums compels us to write shorter, more focused, visitor-friendly text on the walls, more visitors will be likely to actually become engaged with text that's right there in front of them. Being a diligent visitor is easier when there's not an overwhelming amount of things to do.

If we put the greatest amount of effort into preparing interpretive strategies for the highest percentage of people who are going to use them, we still have to put our primary time and skilled attention into developing the words on the walls.

THE LOADED IPAD

Mounted on wall brackets, with tethers, or handheld, iPads in exhibitions can offer visitors options for text size, spoken labels, another language, or music, graphics, diagrams, interactive games, animation, and more and more content! When visitors say that they *like* the opportunity to get more information

via an iPad in an exhibition, I wonder, is that because they expect the museum to offer this new technology, or is it because they actually *need* all those layers of information? Visitors like that it's there, but how much do they actually use it? Is the impact (measured by time spent, number of options started versus completed, and prolonged engagement with the exhibits, art, objects, or phenomena) worth the output (measured by the time and money spent to create, test, update, and maintain)?

At the Brooklyn Museum, Shelly Bernstein not only generates creative content for iPads in exhibitions, she also watches visitors and gathers data on how it gets used, and she posts her data online and shares her lessons learned. In one case, the iPads were mounted in a way that visitors didn't realize what they were, and they jabbed and poked at them in a damaging way until the iPads were reinstalled in a way that visitors recognized and used them appropriately, gently tapping and scrolling.[4] In another case, the iPads were on tethers and could be picked up, but they were not until a label prompted visitors to go ahead.[5] In all cases, iPads located close to the artworks they interpreted were used more, and the most popular subjects to look up were the artists featured nearby.

The American Museum of Natural History loaded iPads for in-gallery interpretation for their bioluminescent exhibition called *Creatures of Light*. This interactive delivery system was well adapted to the dark gallery, and multiple stations with duplicate content were installed with seating for visitors. Content was broken into small chunks with captions for visual materials on "pages" that could be swiped vertically and horizontally to see more options, including text, images, media, and maps. Visitor response was very positive, and the iPad system was able to travel with the exhibition to other sites.[6]

Gallery One at the Cleveland Museum of Art has a number of different digital interactives—including iPads—created to explore the collection in new ways. Its creation has been heavily publicized, and they have generously shared technical information as well as what they're learning about running a massive digital program. Some interesting findings are available on links from CMA's website.[7] Beyond their popularity, the detailed data from analytics of iPad use (time spent and number of options used) are not yet robust enough for many conclusions to be drawn. One surprise, however, was how few visitors are sharing "favorites" from the iPads to social media. Posting to Facebook or Twitter is by less than 1 percent of users. Put your budget else-

where, they advise. This finding resonates with Brooklyn's regarding keeping the focus of the iPad use in the gallery.

And finally, art museum curators fear that iPads loaded with attractive options will distract visitors from looking at the art.[8] Funny, that's the same fear they've had about attractive interpretive labels all these years, and one that has not come to pass.

PROS AND CONS OF DIGITAL LABELS

Nonportable, electronic, screen-based digital interpretation located on the wall or on a reading rail, kiosk, or tethered iPad has the advantage of being easy to update. But how often do exhibit labels really need to be updated? Writing new label copy takes time, and there is rarely money left over for remedial corrections, especially in a temporary exhibition.

Digital labels are usually interactive, allowing visitors to swipe for more information or other forms of media. But when one visitor or group is interacting with a digital label, that experience is limited to the one user's choices. The first screen gets buried; another reader will have to wait their turn. Some visitors may struggle with the interface, not knowing how to use the device to get to the information we've stored there for them, or how to decipher the icons we've put on the screen. Digital devices also give the overzealous curator a place to bury a great deal of extra content for the supposedly dedicated visitor who will presumably "drill down" for more information. Rather than create rabbit holes of information that visitors are unlikely to access in the gallery, put that information on a website. Then they can find it from home, and they can access it comfortably while sitting down, at their leisure.

What about the cost? An iPad format is certainly affordable, but larger digital section panels or introductory labels can be expensive.

WORDLESS AND SPOKEN LABELS

There are situations where digital interpretation can do things better than words on the wall. After realizing that its gallery introduction labels were not getting much attention,[9] the Monterey Bay Aquarium used the panel space where the intro label had been to put a video of beautiful images of the habitat that was the topic of the gallery. The hope was to create a nonverbal introduction and set a mood more quickly and effectively than words could accomplish.

Digital frame videos make nice wordless labels. In the Anchorage Museum's exhibition about the Dena'ina Alaska Native people, a short, unnarrated video shows contemporary hunters using motor boats in contrast to the exhibit's large diorama that depicts a traditional hunter with fishing spears on a platform in the bay.

The Chicago History Museum used large screens as section labels. Videos of people talking to the camera welcome you and explain the themes instead of written words. Narrators for *Out in Chicago* were gay, lesbian, bisexual, and transsexual people who were represented in the exhibition. It was a very personable way to draw you in.

With all videos, however, there is a question in the back of the viewer's mind: How long is this going to last? When a visitor confronts a panel of written words with graphics, and perhaps objects, it is instantly obvious how much time it will take to scan it (seconds) or look at it in detail (seconds or a minute, if it's not more than 250 words, at an average reading speed). With a video, unless the time is posted (a good idea!), the viewer is left to wonder. Visitors can comfortably listen to spoken words at a rate of about 150 words per minute.

DIGITAL INTERACTIVE DEVICES AND EXHIBITS

In this book I draw a distinction between digital labels or interpretive devices (which stand in for traditional label interpretation) and digital exhibits. There are far more types of digital exhibits than types of labels. The recent creative output has been amazing. Visitors expect high-tech and hands-on experiences to be included in new or renovated exhibits, and many museums do not disappoint. The best ones serve an appropriate function in harmony with the exhibition's messages, are easy and fun to use, and appeal to a wide range of ages and abilities. I'll mention a couple of my favorites.

I love watching visitors use and add to the narration of the eighteenth-century French "dining table" video projection at Detroit Institute of Arts. A similar technique was used for a modern Dena'ina "meal with friends" video at the Anchorage Museum, featuring some local Alaska Native delicacies. The imaginative interactivity in these exhibits is open-ended, and visitors can engage in a number of ways. They can watch while standing by; they can watch others putting their hands on the table, pointing and talking about the food and the conversation; or they can participate fully by pretending to become one of the guests.



FIGURE 16.1
Overhead projections create imaginative you-are-there tabletop experiences. At the Huntington Library, visitors can pretend to sort the images.

At the Exploratorium you can "Call the Bridge" by dialing a number that connects you to a real-time microphone on the Golden Gate Bridge about five miles away. What you usually hear is a foghorn. The time that passes between when you hear the bridge's horn on your phone and when you hear it in the air at the Exploratorium is the experience of the speed of sound. You could read about this on a label, but doing it is a much more satisfying experience.

For other examples, Kathleen McLean refers to Wayne LaBar's blog (http://alchemystudio.com/category/experiences-and-museums) "where he shows amazing digital experiences from around the world that are rich with aesthetic experience."[10]

DON'T FORGET YOUR PHONE

In many exhibits the digital device is your smartphone, used for making calls, downloading apps, searching the web, or taking photographs. Visi-

tors are depending on the museum to not just allow the phones but also encourage their use and to provide the broadband Wifi connections that make digital interactivity possible. They can use the phones without the Wifi, but free Wifi in the museum lets visitors know that the use of phones is encouraged.

Museum audiences are accustomed to easy access to the digital network in other parts of their lives. They grow increasingly impatient in places where it is not possible (or where it is prohibitively expensive) to be connected using the device of their choosing.[11]

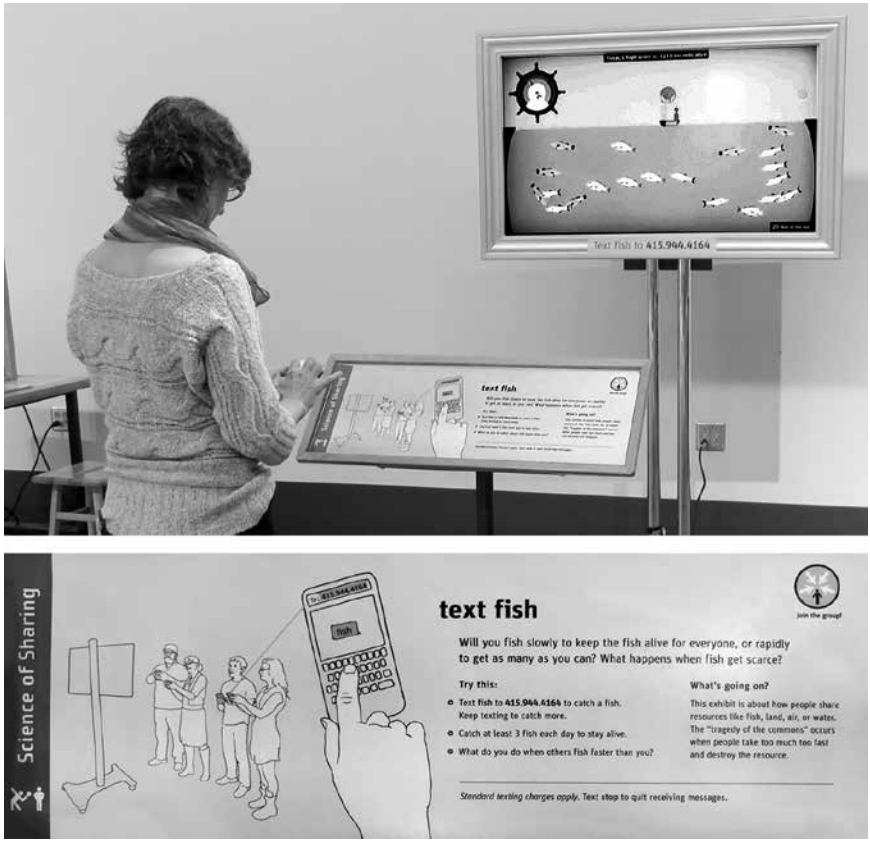


FIGURE 16.2
"Text Fish" is a multistep interaction for digital-savvy visitors at the Exploratorium. Using their smartphones, they can modify the exhibit.

QR codes? I see them. They're kind of ugly and obtrusive. I guess it all depends on how good the information is when you use the code. Was it worth the time and attention? How much value did it add? Do analytics or metrics show they're being used? If all you get is a bunch of little tiny type with poor writing and no graphics, we've taken the worst of what labels can be and put them into a tech-savvy modality. It has to be more than just more information. I think we have a ways to go before some really good examples/models evolve and evaluation data and anecdotes reach a critical mass. In the meantime, I hope museums will keep experimenting and sharing, like the Brooklyn Museum has done.[12]

And yes, museums should let visitors take photographs at exhibits and at planned or unplanned photo opportunities. This most fundamental form of participation benefits the visitors enormously, and there are side benefits for the museum's marketing purposes.



FIGURE 16.3
A mural of an ancient bird stars in this photo-op. Photo by KBDA, courtesy of Natural History Museum of Los Angeles County.

TEST AND CRITIQUE

We have so much to learn about the effectiveness of these new digital devices for museum interpretation. We need more studies (small and large) that evaluate the use and impacts of digital components in the hands of real visitors. The studies should include and share recommendations for tweaks or big improvements, and suggestions for missed opportunities. They should be clear about what did not work or if the devices did not meet the developers' expectations. We need critical reviews, not just glowing reports (e.g., news releases, marketing campaigns) of the recently installed, latest shiny digital thingy.

CASE STUDIES

Since I am neither a designer nor frequent user of digital equipment, I have asked several people to contribute to this chapter. Included are some savvy articles with information from an experienced designer speaking as a critic; another experienced designer giving expert advice from years of practice; an evaluator's reflections and conclusions on a summative study; and a thoughtful user who encountered a useful digital device in the Louvre last summer.

Gallery One at the Cleveland Museum of Art (CMA) was the focus of the "Exhibition Critique" for the Fall 2013 edition of the *Exhibitionist*, which has the theme of "New Media: Transforming Museums, Exhibitions, and Visitors." Jason Jay Stevens was one of the critics. He called Gallery One "amongst the most daring and far-reaching multimedia augmentations of a museum collection to date," and many would agree. In his case study he reflects on Gallery One's intentions and gives us his opinions about some of the devices that contain enough options that it would take several years to go through them all. CMA is being open about its lessons learned and is in the process of evaluating the various interpretive strategies.

I asked Scott Sayre to share his lessons from more than twenty years of integrating media into museum displays and interpretive strategies. Many of them sound familiar, because developing digital media requires the same kinds of careful and thoughtful processes as other forms of interpretation and exhibit design. He touches on the ideas of offering options beyond the museum's walls to build audiences and to draw attention to the inner workings of the institution. I hope that the user-experience testing that digital programs are using will become more common with all types of interactive exhibit development.

CASE STUDY

A MULTIPLE SYSTEM INTEGRATED DEPLOYMENT OF CUTTING-EDGE INTERPRETATIVE TECHNOLOGY

by Jason Jay Stevens, Principal, Flutter & Wow Museum Projects, and Lecturer in the College of Architecture and Design at Lawrence Technological University

Gallery One at the Cleveland Museum of Art opened in 2013 to much fanfare, seen by many in the museum field as a watershed in technology-based interpretation, granting visitors myriad novel pathways for exploring the museum's collection. Gallery One, in fact, encompasses a lot of different things, including half a dozen large multitouch displays, called "Lenses," distributed throughout the gallery, each with its own collection of apps; the monumental Collection Wall that enables gesture-based interaction with the museum's collection; a family area called Studio Play; and the downloadable ArtLens app for tablets and phones. Overall, the project represents a remarkable degree of institutional buy-in and interdepartmental cooperation. Its success relies on good research and prototyping, a focus on robust hardware, a reliance on the easy-to-reiterate quality of software, and the abilities of a team of talented designers, technicians, consultants, and contractors.

The Lenses are installed each at the center of a grouping of artworks in broad thematic categories. They offer clever games that explore the theme or in some cases individual works. The activities are sometimes physical and socially lubricating. In one, visitors strike poses similar to that of sculptures and are rated on their attempts. In another, users draw a line of any shape across the screen and the system locates an item in the collection that contains roughly the same line. Another game will do the same with your facial expression. The effect of these apps is superficial, which is not particularly negative, but it does point to an important criticism of Gallery One: that the means

often outpace the ends. Beyond the thematic groupings, the big idea of Gallery One is its own existence; the artwork and interpretation appear to serve the experience of the technology.

There are examples of apps on the Lenses that have greater potential to develop visitors' understanding of the artwork. One accompanies the "Narrative" grouping and invites the visitor to remix the elements of an exhibited medieval tapestry to reconstruct its story. Another has visitors rearrange a Picasso while standing before the actual artwork. These activities permit an exploration of the artworks in ways labels and low-tech interactives may not.

The Collection Wall is a forty-foot-long multitouch display. Standing back, one is mesmerized by an animated stream of 3,500 collection images, all shuffling breezily among each other. Occasionally a formation of artworks enlarges, forming momentary miniexhibitions. Stepping forward to interact, using iPadlike gestures that scale intuitively to the big screen, users activate a multimodal set of interactions, including a heart button for "likes." Users can browse, build, and share custom tours, transferring their selections to iPads that can be checked out, "docked" wirelessly, and carried throughout the museum. There is no search capability, so the utility of the Collection Wall to the researcher or student is diminished.

The ArtLens app can be downloaded to one's personal device. It provides access to several years' worth of interpretive media in a fairly accessible way, including customized tours and augmented reality labels that appear when one directs her device's camera at a featured object in the gallery. The app can accompany the visitor as she wanders freely. In fact, at home, the app is as extraordinary as it is in the gallery, perhaps more so considering the way the technology in the gallery invariably chips away at the direct experience of the art. Because each artwork is independently, wirelessly tracked by the CMA's central network, one can visit the museum virtually, exactly as it is, from anywhere at any time. This represents a huge

step toward fulfilling technology's potential to increase the accessibility of artwork on several levels, and it provides an educational experience to a broad range of learning styles. However, as with interpretation in any form, the question remains as to whether the mediation distracts the visitor from a richer, more personal experience of the art. Ongoing evaluations of Gallery One at CMA will explore the outcomes.[1]

NOTE

1. This case study is based on an exhibit critique first published in the *Exhibitionist*, "Critique of Gallery One and ArtLens, Cleveland Museum of Art," 32, no. 2 (Fall 2013). There are photos, and more photos can be found on the CMA website.



FIGURE 16.4
In a commercial user-testing lab, the interactions of "visitors" are tracked and recorded for analysis. Gathering essential data like this yields insights for making more effective digital exhibits.

CASE STUDY

NOTES OF A DIGITAL MEDIA EVANGELIST: TEN LESSONS FROM TWENTY YEARS OF MUSEUM MEDIA INTEGRATION

by Scott Sayre, EdD, Chief Digital Officer, Corning Museum of Glass

We have witnessed technological revolutions from interactive multimedia, the birth of digital photography and video, and the emergence of the Internet to the ubiquity of mobile and wearable computers. All of these tools have empowered museums to enhance their collections and interpretive approaches inside and outside their walls.

Along with new tools come lessons on how to best use them. While my list is long, I wanted to share ten of my most universal discoveries from twenty years of working with more than one hundred museums.

Lesson 1: Develop an Interpretive Strategy—Then Use It

From brochures and labels to docent tours and technology, most museums invest in a range of interpretive tools. While these tools can be effective on their own, I have found that visitors and museum staff members can greatly benefit from the development of an overall interpretive strategy that provides guidelines on how these interpretive threads work together. A well-crafted interpretive strategy can reduce redundancy, strengthen key messages, address multiple learning styles, and reduce concerns about visitor accessibility (including for those who don't have a personal device).

Lesson 2: Create a Continuum—Beyond the Museum Walls

Today's connected world provides an infinite platform for interpretation and a wide range of potential touch points. We now have the potential to create a perpetual visitor experience in which our visitors are activated, whether by using a mobile device for a self-guided tour, attending an event, researching

an object on a kiosk or website, or even shopping in our stores. Interpretive teams should take full advantage of these potential connections for ongoing relationship building.[1]

Lesson 3: Come Together, Right Now—Great Projects Require a Village

The most successful interpretive technology projects are produced by cross-departmental teams that draw on the strengths and authority of all the participants, whether three people or more than a dozen. This approach not only produces superior content but will also provide an excellent opportunity for internal team building and generate museumwide ownership in a project.

Lesson 4: Program Deliberately—Don't Do It Just Because You Can

Technology has reached a point in its development where we often have the ability to offer far more information than visitors have an appetite for. My work has shown that interpretive teams need to consciously work against feature and content glut, especially when integrating internal information systems and social media.

Lesson 5: Engage—Empower the Visitor

Social media, wikimedia, blogs, and review websites have empowered the public to interact with the world, especially information providers, in new ways. While we can't control how our visiting and nonvisiting publics will use these tools, we can play a proactive role in incorporating them into the interpretive strategy. A good way to start is by promoting the opportunity for public contribution and the contributions themselves, both on-site and online though URLs, hashtags, and live feeds. The Minneapolis Institute of Art's highly popular *Restoring a Masterwork* project provided an in-gallery and online forum for visitors to ask conservators questions about the conservation of a large seventeenth-century painting. This project and the public

interaction combined to become a driver for repeat online and on-site visitation.[2]

Lesson 6: One World—Don't Segregate Interpretive Technology

My work has shown that the most effective interpretive technology is designed to be used in close proximity to the works it relates to. Studies have shown that competition between interpretive technology and collection objects is nonexistent for most visitors. We need to encourage our visitors to bring and use their personal devices to access our digital content as well as resources from the world outside our museums' walls.[3]

Lesson 7: Test, Test, Test—The Users Know Best

Audience research, formative and summative evaluation, usability testing, and usage statistics should be built into every digital technology project plan. We are rarely good at assessing our own work without any visitor input. I learned this lesson early on with the ArtsConnectEd project (artsconnected.org), which won many awards from the museum community before failing miserably in the usability lab and requiring a major redesign.

Lesson 8: Don't Hide It—Invisibility Will Get You Nowhere

The racks of audio-tour equipment in museum lobbies that once helped market our programs are quickly being replaced by wireless cellular and Wifi networked content. While this trend reduces physical visibility of museum-provided hardware, the success of these programs is dependent on traditional and nontraditional forms of marketing—signage, labels, previsit web-based information ("Don't forget your phone"), installed devices—to alert visitors to what they might otherwise miss.

Lesson 9: Respect Your Assets—Plan, Preserve, and Repurpose

Producing and preserving quality digital media assets should be looked at as a long-term investment. The price of media is no longer so much about the cost of the equipment as it is about the time and attention put into the production and preservation of the resulting material. At the same time, high-quality assets have the potential of greatly increasing the public's understanding

and appreciation of the related objects and/or collections. Digital assets are quickly becoming an extension of collection records and can be shared with a wide range of applications.

Lesson 10: Own Your Own Support

Our visitors expect interpretive technology to be up to date and reliable. All of the successful interpretive media programs I have been involved with, from gallery installations to bring-your-own-device (BYOD) programs, rely on knowledgeable staffers who can troubleshoot problems and address visitor questions and issues. External support contracts may be necessary, but in-house support is essential.

CONCLUSION

All of the lessons above share one thing in common: They are all things that are within our control. Information technology is a moving target for all organizations, and while it is not possible to control the changes in the technological landscape, I have found that it is possible for us to control the factors that surround its development, delivery, and preservation. As stewards of cultural heritage, we must do everything in our power to acknowledge, understand, and accept ongoing responsibility for our museums' technological presence and legacies.

NOTES

1. Scott Sayre and R. Dowden, "The Whole World in Their Hands: The Promise and Peril of Visitor-Provided Mobile Devices," *The Digital Museum: A Think Guide* (Washington, DC: American Association of Museums, 2007).

2. "Restoring a Masterwork," http://archive.artsmia.org/restoration-online/castiglione/general-overview.cfm.html; "Sharing the Experience: The Building of a Successful Online/On-site Exhibition," http://www.archimuse.com/mw2000/papers/sayre/sayre.html.

3. "Multimedia That Matters: Gallery-Based Technology and the Museum Visitor," http://www.firstmonday.org/ojs/index.php/fm/article/view/1244/1164.

Evaluator Jessica G. Brainard studied visitors' use of and thoughts about the digital labels in a special exhibition at the California Academy of Sciences where iPads were used in place of traditional labels.[13] Brainard's findings have some things in common with the iPad stations used at the American Museum of Natural History in their exhibition about bioluminescence with success and challenges.[14]

At the Louvre, the best thing about the rentable, carry-it-with-you Nintendo is its capability to meet your wayfinding and orientation needs. In fact, many museums would delight visitors by helping them navigate the galleries and find things they are looking for. Orientation—the absence of it—is one of the top recommendations for what should be improved in museum exhibitions.[15] Keith Bechtol tells his tale of using a Nintendo, which increased the pleasure of his visit, but he still could not last more than three hours in the behemoth experience.



FIGURE 16.5
Wall-mounted iPads replaced static interpretive labels in a temporary exhibition called *Animal Attraction* at the California Academy of Sciences.

CASE STUDY

AN AQUARIUM'S FIRST FORAY INTO IPAD LABELS

by Jessica G. Brainard, Brainard & Associates, Exhibition Development, Writing and Evaluation

With the rise in popularity of electronic tablet devices, iPads and their cousins have been popping up in museums in recent years—both for use as digital exhibit labels and as an interpretive tool for freewheeling docents. The California Academy of Sciences' first foray into the use of iPads in a gallery setting was with the Steinhart Aquarium's *Animal Attraction* exhibition.

When the academy reopened in its current building in 2008, ID labels for individual aquatic exhibits were displayed on tiny digital monitors, each featuring life history information for five species exhibited in a nearby tank. The digital labels cycled through automatically, providing visitors with no ability to control which label they were viewing at a given time. Remedial evaluation findings of the Steinhart Aquarium indicated that many visitors were frustrated by this format. This prompted exhibit planners to give visitors more control over digital devices in their next exhibition, *Animal Attraction*.[1]

"Animals go to extremes to pass on their genes" is the big idea for this exhibition, which highlights the seemingly bizarre mating and courtship rituals and reproductive adaptations of a diverse range of aquatic and terrestrial animals. These include the female mantid's habit of biting off the head of its mate, and the "switch hitter" tricks of simultaneous hermaphrodites such as the fairy basslet fish and the banana slug. With a modest number of static graphic panels and few interactive components, the eighteen iPads installed in *Animal Attraction* do the heavy lifting for delivering interpretive content. An iPad is located next to each live animal display and replaces the

traditional printed ID label. Each iPad includes a gallery of still images and video that help to illustrate the featured courtship or mating behaviors.

Designing for an iPad in an exhibition setting has its constraints in terms of hardware, user-experience design, and back-end programming. Figuring out how to display the wall-mounted iPads was no easy task, and Apple, Inc., wasn't forthcoming with tricks for how to limit access to controls. But savvy academy exhibit engineers designed a workaround using elegant casing. And for security measures, they locked the iPads' system settings.

In tandem with the exhibition design, members of the academy's digital studios department developed a new content management system, which provided exhibit developers with the ability to update label text and images. However, content developers soon bumped up against the myth of updatability: It may be easy to upload new text and images, but good label writing, image research, and acquisition still take time up-front. There are no shortcuts when it comes to the actual content development.

As for label writing for a digital interface such as an iPad, there are things to keep in mind. For one, it's important to remember that when you give visitors more control—the multitouch interface of the iPad allows them to pinch in and zoom out—you have less control over what they see on the screen. For that reason, *Animal Attraction* developers opted to limit the pinch and zoom interface on the iPads in the gallery. Even still, digital templates in general aren't forgiving when it comes to finessing line breaks. For example, do you hate "widow" words dangling out there on their own line? Then, as the *Animal Attraction* team learned, you need to make sure that you keep to a precise character count when writing digital label copy.

Exhibit planners assumed that the iPads in *Animal Attraction* would appeal to a younger demographic, yet might possibly alienate older visitors who are not accustomed to multitouch technology. However, timing-and-tracking findings indicated

that the iPads had wide appeal across all visitor segments studied. The vast majority (79 percent) of visitors used an iPad during their visit to *Animal Attraction* and spent about 20 percent of their time in the exhibition using the device. Moreover, visitors—regardless of their age, gender, and group composition—shared similar rates of iPad use and time spent using iPads. Focused observations also revealed modeling behavior in the case of mixed-age visitor groups. For example, youth visiting with an older relative such as a grandparent tended to instruct the older visitor on how to use the iPads.[2]

Prior to the *Animal Attraction* summative evaluation, exhibit planners had some concern that visitors' experience using the iPads might detract from them spending time observing the live animals. However, focused observation and interviews revealed that the iPads enhanced how visitors experienced the live animal displays. Many visitors said that, with the iPads, they learned new or more information about the featured animals and noticed more of the animals' behaviors and details. In addition, as timing-and-tracking findings indicate, visitors who used an iPad in *Animal Attraction* were more likely to stay longer in the exhibition overall.

However, there were usability issues regarding navigating the layered iPad content. Half of the observed visitors didn't notice "Behind the Scenes" and "Next Animal" icons at the right side of the iPad navigation layout. The team put in a fair amount of effort developing this content, which included biologists' anecdotes about husbandry and why they think that particular animal is cool. The lessons learned here were to be sure to prototype, and just because you can include multiple layers of content in an iPad label doesn't mean you necessarily should. *Animal Attraction* visitors aren't necessarily looking for more in-depth information beyond the species name and quick stories about courtship, mating, and reproduction.

In many ways, *Animal Attraction* has served as a test case to see how iPads would fare in an often-crowded aquarium setting with high visitor throughput. The California Academy of Sciences is

now faced with the task of determining whether to replace the older digital ID minimonitors with iPads or to explore alternative types of multitouch or kiosk-based digital technology with which to identify the species featured in Steinhart Aquarium exhibits. Alternatively, they could forego digital devices altogether and return to the use of good old-fashioned ID panels—graphic panels located in just the right spots for, say, a mom who's searching for the answer to her son's most basic aquarium question: "What kind of fish is that?"

NOTES

1. Randi Korn & Associates, "Remedial Evaluation of *Water Planet* at the Steinhart Aquarium," unpublished report, San Francisco, CA: California Academy of Sciences, 2009.

2. J. Deuel and J. Brainard, "*Animal Attraction* Summative Evaluation," unpublished report, San Francisco, CA: California Academy of Sciences, 2012.

WHAT DIGITAL SHOULD DO

I believe that digital devices have a great capacity to help create better experiences for visitors in exhibitions. They could help visitors with the primary features of wayfinding, agenda setting, and introductions. They could also flag the hot spots, and invite annotation. All of these activities operate at a different scale than the basic interpretive caption labels. Some museums have already incorporated them, and they deserve more development in the near future.

Wayfinding and Orientation

Both physical and conceptual wayfinding can be accomplished digitally. Instead of a paper map, the electronic map would continually locate the "you are here." Orientation with a digital device should be coordinated with standard signage, so that visitors get reinforced in both modalities. Any new system will require vigilant iterative testing to get it to work effectively.

CASE STUDY

NINTENDO AT THE LOUVRE

by Keith Bechtol, Postdoctoral Research Fellow,
Kavli Institute for Cosmological Physics, University of Chicago

Last summer I had an opportunity to make my first visit to the Louvre in Paris. The collection of art as well as the opulence of the building itself astounded me, but one of the unexpected delights was trying out the Louvre's latest digital guide on a Nintendo 3DS XL. Far beyond the usual set of headphones and simple audio controls, this device includes two full-color touchscreens that enable a range of useful features including interactive museum floor plans, suggested thematic and "highlights" tours, and descriptions of hundreds of artworks.

I arrived at the Louvre just before the 9 a.m. opening on a Monday and purchased both museum admission and a voucher for the Nintendo (5 euros) at one of the self-operated kiosks in the central lobby. The whole process of museum entry and depositing my passport as collateral took only a few minutes.

Not yet realizing the features of the Nintendo, I started navigating toward the *Code of Hammurabi* using the traditional paper map and promptly became disoriented to the point of not knowing which floor I was on. However, each time I entered a new section of the museum, the Nintendo automatically played a brief audio introduction, and so I began inspecting it more closely. Prior to my visit, I had not used a handheld videogame console since the 1990s-era Game Boys, but the Louvre's guide proved simple and intuitive. The interactive map feature indicated my current location and significant nearby artworks such that I could preview surrounding pieces. The wayfinding feature was worth the price alone.

Next I tried searching for the *Venus de Milo*, but this time using the digital instead of the paper map. It illustrated the path and even estimated the walking time (a feature that also

works for cafes and restrooms). Upon reaching the *Venus,* I was particularly impressed with the audio descriptions that encouraged visitors to walk all the way around the sculpture to appreciate different views of the work. Furthermore, beyond the one-minute overview, users could select options to hear additional thoughts from the curator, the artist, or another point of view. The tone felt more like an interview than a lecture.

I had taken a few art history courses in college and had browsed the museum website ahead of time, so I arrived with a partial visit plan, but I was still curious about the range of built-in tours available on the Nintendo, each focused on roughly ten works. This feature alone would encourage me to come back. If I did encounter an unfamiliar piece that caught my interest (e.g., what's the story behind the dramatic *Milo of Croton*?), the guide also allowed me to look up specific pieces using the number indicated on the wall label for the artwork.

The advantages of the Louvre's guide particularly stand out when considering the daunting Louvre experience. More than any other museum I have personally visited, the Louvre runs the risk of being viewed as a challenge to be survived or conquered (such as a marathon, horror movie, or hot-dog eating contest). I knew the impressive museum statistics before visiting (over 30,000 works of art on display, over 600,000 square feet), but hadn't fully appreciated the multilevel labyrinth of corridors and walls covered with canvases until being inside. Most audio guides I have encountered have focused on a single exhibition with a relatively linear flow of information, but the Louvre's audio guide has greater ambitions. The Nintendo facilitated a whole-museum experience by calling out specific representative works and allowing visitors to explore wherever and further when desired.

Reflecting on my satisfying encounter with the Nintendo, I think some additional features might be useful: emailing yourself a list of favorite artworks; updates alerting you to works that are currently off display; and the ability to navigate to "Find your buddies" who have taken a different route.

Offer an Agenda

Because many visitors arrive without one, a digital device can help people set an agenda. By presenting a few options or asking personal questions about topics of interest to them and time budgets, the device can make some individually calculated suggestions.

Provide Introductions

Because we know from visitor studies that visitors often miss or skip the introductory label, the introduction could be offered aurally. As you enter a new section or themed area, a quick tidbit of a spoken label would let you know what's going on. Not more than seventy-five words, not more than thirty seconds. It would play during those first few moments when visitors are looking around, getting their bearings, seeing what catches their eyes. Of course you could turn off this spoken feature if the exhibit labels were already doing the job well.

Flag the "Hot Spots"

When a visitor moves into the vicinity of an exhibit that has a high attraction rate (> 50 percent as determined by tracking-and-timing studies of visitor behavior), the device could suggest that you take a closer look, tell you why it is so popular, or invite some form of participation.

Let Visitors Annotate the Labels

Instead of encouraging or facilitating the use of social media outside the walls of the museum, the museum could invite visitors to talk back to the label writers themselves—with their reactions, corrections, questions, or elaborations. More than a talk-back sticky note, this kind of interaction could welcome visitors into a conversation about the actual scripts of the labels. As technology evolves I'm sure there will be many ways to enable visitors' comments on the labels and feedback from the exhibit developers. I hope the discourse will prove to be focused, informal, civil, and helpful for all through the shared goal of having effective and lively communication.

Which brings us back to the opening thoughts of this chapter: Even with the abundance of digital opportunities in museum exhibitions, the words on the wall will continue to be an important starting point that can both satisfy a need for a brief contextual opening and be a point for further discussion.

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IV

TASKS

17

Getting Started (and Getting It Done)

Resist the temptation to begin writing actual label copy until all of the other front-end exhibition tasks have been done. Getting finished is easier when you can see the way to the end from the beginning.

Once you have the big idea formulated, the front-end evaluations conducted, the floor plans roughly laid out, and the modalities chosen for the different types of exhibition elements, you are ready to start writing. Those are a lot of things to have in place before ever putting pen to paper (an archaic notion in this age of computers, though some writers still prefer to begin this way), but the more you know about what you want to say, to whom, and for what purpose before you write, the faster and easier the actual writing will be.

Some writers recommend writing a general overall narrative or walk-through of the exhibit experience before writing labels. This can be helpful, especially for giving funders or marketing people an idea of what the exhibit will be like. But the narrative walk-through should not be set in stone. It will become out of date very easily, and trying to keep the narrative and the actual label copy both in agreement is difficult once label drafts are started.

WHO SHOULD DO THE WRITING?

Who, in the first place, should write the labels? The answer I give is the person who has the most time and the most enthusiasm for the project. The person

can be a content or subject expert, or a nonexpert. The subject specialist might need help in making labels speak in visitors' language and in remembering the most basic questions a novice visitor has about the topic. Writers who are not intimately familiar with the topic, on the other hand, will need a little help in making labels accurate and comprehensive and in not trivializing important points. Enthusiasm is necessary in either case because it gets the writer through many drafts and repeated rounds of criticism from the team. Time is absolutely necessary for the editing and evaluation that will be needed to improve the label's effectiveness.

More and more museums are contracting out the writing to freelancers, because there is no one on staff who has the time or label-writing expertise—which inspires enthusiasm—to do the labels. Sometimes the writer is a guest



FIGURE 17.1
Often the last thought written on a label draft will make a very good opening statement.

curator who is an expert in the subject, but not a staff member. Sometimes it is a person skilled in writing. Even when an outside person is hired, the museum still has the ultimate responsibility for the voice and the content, and the writer needs clear guidelines for what those are. Furthermore, it takes time to get a new person up to speed with the rest of the project if they are brought into it in the middle.

MANUALS OF STYLE

When the Detroit Institute of Arts reinstalled its entire collection all at once, it hired a team of freelance label writers to help. The DIA provided writers with detailed guidelines informed by extensive evaluation and a well-developed big idea. These included a primer for visitor-friendly writing style and descriptions of each new type of label including its location, purpose, and recommended word count. Writers also got content for each label—usually reduced to a single page of text—that had been prepared by DIA curators summarizing what they wanted visitors to know.

Many institutions have developed label-writing guidelines and made them available to the field. These include the Getty Museum,[1] the Victoria & Albert Museum,[2] the Oakland Museum of California,[3] and the Liberty Science Center.[4] Look around to see if your institution has produced guidelines. There may be something in the back of a file cabinet. Or consult the excellent examples from these other institutions.

SCHEDULING THE TIME

How long will it take to write the labels? This is a loaded question and a difficult one to answer. "Everyone is in denial about how long it takes and how much it costs," says Judy Rand, an experienced and well-known museum label writer and exhibit planner who has managed many writing projects.[5] Many museums have unrealistic expectations for the number of labels that a writer can crank out in a week, uninformed conceptions about how long the editing and review process can take, and naive notions about what is involved in transforming words into a well-integrated typographic presentation in exhibition design.

Depending on the purpose and length of the label (function, number of words), the complexity of the content (subject matter, big idea) and the amount of background research required, it can take from fifteen minutes to

two hours per label to research and write—the first draft. It can take another fifteen minutes to two hours to get through various editorial and review stages. It can take another fifteen minutes to two hours per label to integrate the words with the images in the design process. This gives a range of forty-five minutes to six hours per label to get from research to final, integrated copy. If there are twenty-five objects needing caption labels, an introduction, three group or section labels, and a credits panel, that's approximately 30 labels. Thirty labels multiplied by four hours each (a rough and low estimate), gives us a total of 120 hours.

But that 120 hours is deceiving, because it is not 120 continuous hours. It is not a three-week job at 40 hours a week. It actually takes much longer. There are many hours "lost" in between, including the time it takes to:

- get references from the library;
- get calls back from information and image sources;
- submit rough drafts and hear back from reviewers (weeks!);
- make appointments with busy designers to hash out layouts, images, communication goals, and a host of other design decisions that must be made jointly by the writer and the designer;
- review (more weeks) rough layouts, revisions, and "final" PDFs containing images and type in place.

A rough rule of thumb: Multiply the number of labels by three hours each for how long it will take, then triple that figure. "Yikes!" you say. "That's unreasonable, impossible; we don't have that kind of time!" Well, I was speaking ideally. This hypothetical scenario was to make you think again about allowing more time for labels. There is no denying that good ones take longer to make.

GETTING ORGANIZED

When it is time to write, I have found that it is helpful to have the following items handy to look at as I write: my research notes, the exhibition floor plan and elevations, the big idea, and pictures of the objects or other visuals of what the "stuff" of the exhibit looks like. I try to imagine I am a visitor, with limited time and no special vocabulary to understand the topic. What would I want to know first? What would probably catch my eye first?

Possible Visuals	*Draft Text*
Photo of a mass of crawfish in a healthy swamp	Pound for pound, there are more cooked red crawfish than all other animals combined.
People eating crawfish Photo or illustration of crawfish harvesting	Crawfishing in Louisiana swamps contributes greatly to the local economy. Each year, people throughout the United States eat about forty million pounds of crawfish caught in swamps.

Even in a first draft of label copy, before any room layouts have been designed, label writers should be imagining what visuals would work well with their words. "But I'm a writer, not a designer," a label writer might say. You need to be a bit of both if you are writing for exhibitions, because words in exhibits cannot, do not, and should not stand alone. You should write with the verbal and visual in mind.

When making the first draft, use a two-column setup: words that describe possible visuals on one side, words for label text on the other. The visuals list should be thought of as an aid to visual thinking at this point. The designer can use the suggestions or not or come up with a better idea, as designers often do. The writer is not dictating anything, only suggesting and thinking visually.

In the first draft, there does not have to be close agreement between the suggested visuals and the text. Beginning with more visuals than you will need will allow for more flexibility and choices later on. If only one image is specified and it turns out to be unobtainable, it will leave a hole in the layout.

DOCUMENTATION

As you write, and as you research images, be sure to keep good records. Documentation of authors, titles, sources, and dates will be valuable pieces of information when you have to go back and look something up, verify a fact, defend an argument, relocate the source of a photograph or illustration, or remember when and why you decided to do something a particular way.

Keeping track of drafts by date and number will aid the writer, editor, designer, and other team members to stay in sync. Electronic copies of drafts can become hopelessly mixed up, and errors that got corrected once can

CASE STUDY

AN ELECTRONIC GATHERING: A THOUGHT RIFF

by Toni Wynn, Writer/Educator, Word-Burning Stove LLC

I write and edit labels and submit them for rounds of review through label coordinators. I've ducked behind them all these years, and I do not have a review system of my own design.

Looking forward, though, I'd like to be a silent participant in a review that would take place in real time in a Google Hangout or other online meeting. I'm not at all interested in compiling, consolidating, and creating consensus, but I would find it helpful to listen in on an executive review meeting. That really is the crux of it—because I'm interested in language, I want to steal as much of it as I can from reviewers' comments, and most reviewers are livelier and less guarded when they're speaking as opposed to writing.

I have a particular distaste for the Track Changes feature of Word, by the way. Somehow, liberating reviewers' comments from those boxes and placing them in a comments column of a table or other template feels like more of a conversation to me.

I'd like to see some standardization, and it has more to do with training than with collecting comments. I'd like all executive reviewers to be trained. Coordinators, too. A selection of review templates would naturally emerge from that.

There are so many ways to do remote and virtual meetings, and screen-sharing features really open things up. I'd love to see video or animation employed in reviews. It would be great to flow the label text into the drawings so the reviewers could see it on a screen in a 3D rendering of the exhibit space during their meeting. Some museum folks somewhere probably experimented with that when *Second Life* was popular. Reviewers who were virtually immersed in the proposed exhibit space would get out of their heads more, I bet.

reappear when files are shared, modified, and not updated. One person needs to be responsible for knowing where the text is and what stage it is in. Ways of keeping track should be established before you start writing, not halfway through.

GETTING THROUGH THE EDITING PROCESS

The place to spend the most time is in the text-drafting stages. Refining stylistic subtleties, responding to editorial suggestions from advisors, matching words to visuals, honing text so that it expresses the communication goals with economy, efficiency, and effectiveness, evaluating text with visitors, putting the copy away for a week and coming back to it for a fresh look—all of these things take time. Schedule it in.

It is not uncommon to have five to seven drafts between the first and the final, often with very minor edits, sometimes major ones due to changes in emphasis, new information, disagreements about style, or getting the actual photograph, object, or artifact in hand. By doing all the right things before you start writing (e.g., consensus on the big idea, types of labels to use, voice), the editing can be relatively quick and painless, even though many drafts may be necessary. Editing is much easier when it involves polishing, not major overhauls or redirections. With preparation and practice, the differences between a first and subsequent draft will involve editing for style, content, and matching words with visuals.

Often there are multiple ways to fashion a label. What you say will depend on the big idea, the object displayed, the context the label is in, and other factors. Below are three drafts with different vantage points. The label tells about a lifesaving station that had a key clock post where surfmen who patrolled the beach clocked in during their rounds. What should the subject of the label be: the surfman, the post, or the key? What do you want readers to pay the most attention to? Notice how the emphasis changes with the different versions:

1. Before radio communication, surfmen walked regular patrols along the beach looking for mariners in distress. To prove he'd done his job, a surfman punched in at a key clock post, located two miles in either direction from the Life Saving or Coast Guard station.
2. Posts like these were driven into the sand two miles in each direction from the Life Saving Service or Coast Guard stations. They were the destination for surfmen, who patrolled the beach on foot looking for mariners in

distress. A key attached to the post made an impression on the surfman's time clock, proving he made his rounds.

3. This concrete post originally housed a key used to prove a surfman had walked his two-mile patrol. Stashed inside the metal box, the key was fished out by a surfman and pressed into his time clock, registering that he'd made the journey.

In the next example, the first version contains too much subjective interpretation, which gives the impression that the label writer is trying to dominate the visitor's experience. The second version was shortened to make the text more specific and subtle. The label is for one photo, *Industrial Detail*, from an exhibition of black-and-white prints by German photographer Albert Renger-Patzsch.

> Renger-Patzsch always photographed his subjects with an objective eye, yet his photographs often transcend the literal and present a magical transfiguration of the object. Here his subject was a row of freshly milled metal castings that had just been planed smooth, their residual filings still accumulated in the crevices. He angled his lights to cast a silvery sheen over the surface of the castings and the filing, which punctuate the composition with tiny specks of luminosity. The factory assembly line has been transformed into a hypnotic maze of interlocking abstract forms.
> —original version

> A row of freshly milled metal castings had just been planed smooth, with residual filings still accumulated in the crevices. Renger-Patzsch angled his lights to cast a silvery sheen over the surface of the castings and the filings, which punctuate the composition with tiny specks of luminosity. The literal factory assembly line has been transformed into a hypnotic maze of interlocking abstract forms.
> —edited, shortened version

The person who has been designated as the label writer should be given the responsibility for seeing the draft texts through the editing and design process. The writer needs to have control over what happens to the copy, to keep the process on track, and to keep one, clear vision of where it has been and where it is going. This also helps the writer retain enthusiasm and "own-

ership" of the labels. If the writer writes and hands label copy over to editors, who make changes and hand it over to designers, who mark it up and add illustrations, the end product will lack the cohesiveness and consistency that can only come from having one person in charge.

There are several things that can slow down the editing process:

- Working with inaccurate, incomplete, or out-of-date materials in the first place.
- Editors or reviewers rewriting or retyping your text instead of editing directly on the draft provided for comment.
- Failing to provide comments within the designated time schedule.

Reviewers should be asked to respond on the draft copy and return it to the writer on time. The team of reviewers should be large enough (five or six) so that if one person is out of town or cannot perform the job in the allotted time there will be enough other comments to cover the task adequately. The team should also be small enough (fewer than ten), so that integrating comments does not become a herculean job. Reviewers should include people with different responsibilities, such as content accuracy or fact checking and alignment with the museum's mission and institutional style. The person who has the last word (usually the director, curator, or project manager) should be identified early in the process, and should be available to consolidate comments from all the reviewers, resolve any contradictions, and provide one marked-up document to the writer in a timely manner.

These tricks can speed up the editing process for the writer:

- Spread all the returned drafts out on a table and go over all of the comments from all of the reviewers for each page or label, slowly, one by one, at the same time. If you want to save paper, cut and paste all reviewers' comments for the same page or label into one document. (Some people still prefer to use paper.)
- Ask reviewers to make their comments on a single electronic document stored in the cloud (i.e., a Google Doc), with each reviewer's notes in a different color. This way everyone can see all the comments.
- Do not sit down at a meeting with reviewers in person and try to rewrite anything as a group.



FIGURE 17.2
Between getting started and getting done, writers will feel a seesaw of emotions about their labels, which is to be expected.

Circulate revised drafts as soon as possible, before the reviewers forget what they last saw. Tell reviewers that you will not respond to or incorporate all their edits and that they should keep a copy of their own comments. If the reviewers understand that their edits are suggestions, not the law, the label writer will be able to function in a more professional manner. Reviewers should review, not write.

A smooth editing process is most likely to happen when the reviewers know and trust the label writer. But that is not always the case. Sometimes it is necessary for writers to respond individually to a reviewer's comment—to show why they are not taking the suggestion and to argue for their choices. This is a time-consuming mentoring process, and it can add significantly to

the editing turn-around schedule. If the reviewers are not going to be comfortable with allowing the writer some amount of freedom, the review process should be factored in with a longer timeline. When everyone on the team wants to be intimately part of the label creation, it takes a very long time to produce a finished product.

GETTING FINISHED

There is no such thing as "final" copy. Even after it has been silkscreened on the wall or sent to a digital display device and the exhibit is open, changes can be made, if necessary. There has to be some flexibility and graciousness in letting things go even though they are not perfect. You do the best you can, in the time you have, within the budget you have. "Don't get it right, get it written" can be watchwords to keep you from getting bogged down. Again, a clear vision of the communication goals, shared by the exhibit team, is invaluable.

NOTES

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18

Evaluation during Development

Getting feedback from visitors at all stages of exhibit development and label writing—before you start, during rough drafts, and at the "final" text stage—can help you produce better exhibit labels.

Reading this chapter cannot be a substitute for learning about evaluation from other resources where the philosophies, rationales, and methods of collecting, processing, and reporting data are covered more thoroughly. A good place to start is by joining the Visitor Studies Association and using their resources or attending a VSA conference workshop for beginners. My hope is that this discussion will make readers who have not tried evaluation want to try it and will give more useful examples and ideas to those who already have.

WHY WE SHOULD DO EVALUATION

One of the biggest mistakes writers make, especially writers who are subject experts in what they are writing about, is to assume that "people will know that—it's obvious." Equally dangerous, however, is to assume that the audience is stupid and the only way to reach the majority is to simplify text to a childish level. Neither assumption is true. Evaluation can help sort out what visitors know, what is or is not obvious, and whether the assumptions made by exhibit developers about the audience are grounded in some form of shared reality.

CASE STUDY

MY FIRST FORMATIVE EVALUATION

by Beverly Serrell

I was working at the Field Museum in Chicago as a part-time exhibit developer, helping to plan small temporary shows to fill a gallery during transitions between larger traveling exhibitions. I'd learned about formative evaluation at a Visitor Studies Association meeting and was eager to try my hand at it.

The exhibition was to be of photographs from the Field's extensive collection of historic images of the museum. I had done some front-end evaluation with visitors by asking them to select photos that appealed to them from a stack of copies I'd picked from the collection. I had written an introductory statement and brief captions for each photo, and made a set of photocopied mock-ups of the images and their labels. I was ready to test.

I placed the labels and images on the walls of the small gallery where the photo exhibition would be installed. Then I invited Field Museum staff to come to the gallery at 5 p.m. for a few minutes to look at the exhibits and review the prototype in a written questionnaire that I gave each person who came.

After reading the filled-out questionnaires after everyone had left, I drove home crying. I was wounded by my critics' comments, personally crushed by their lack of praise, but I vowed through my tears, "I believe in the PROCESS!"

Moral of the story: Don't let your ego get too heavily involved. You are perfect, but the work can always be improved.

Before I ever did any kind of evaluation, I knew a person who spent one summer on a research project to analyze family group behavior at Brookfield Zoo.[1] When the summer was over, I asked him what he thought of visitors, after spending many hours following them around the park in the noisy crowds and the sticky heat. I expected him to be glad that he never would have to watch another visitor, but instead he replied, "Oh, they are really very nice. They work very hard to find their way around the zoo and to understand the labels near the animals. They seem to really appreciate what the zoo is trying to do for them." I later found the same thing to be true in many other museum settings: By carefully watching visitors you get a much better perspective on several things—how hard visitors try, the problems they encounter, and solid clues they give us about how we can make improvements that will benefit their experiences.

Museum practitioners who have not spent time systematically and unobtrusively watching visitors may tend to remember only the people who are acting rudely, breaking the rules, or not paying attention. After watching visitors more objectively and carefully, you lose the typical condescending attitudes of "lowest common denominator" or "dumbing down." As art educator Danielle Rice put it, "Indeed, it is possible to fall in love with one's visitors and to respect and value their wishes, desires and perceptions."[2] You get to the point where you thoroughly appreciate what *they* can teach *you* about exhibits and labels.

When visitors cannot figure out what labels and exhibits mean—when people fail to understand or make a connection—many will blame themselves by saying, "I didn't have enough time to look carefully," or "I don't have any background in art," or "I'm just here because my friend wanted to come." The fact that they are so willing to blame themselves as opposed to blaming the museum indicates the respect they hold for the institution. We, in turn, should be more respectful of them.

Evaluation can help exhibit developers encourage and enable their visitors to feel competent and confident. Visitors will enjoy their visit more and leave the museum feeling that it was a place for them. In the new paradigm of visitor-centered museums with narrative interpretive exhibitions, evaluation is essential to making museums inclusive, equitable, and socially responsive to their communities. Labels play a very large role in creating positive feelings for visitors. When visitors do not have successful learning experiences, the

failure to communicate may lie to a large extent with the labels. Harris Shettel, who has been evaluating exhibits for many years, says, "In every exhibit we evaluate, labels are key to the problems."[3]

WHAT EVALUATION CAN TELL YOU

There are many ways that exhibit evaluation can be used and many benefits for using it. The types and benefits are often broken down into three major groups, depending on when they are done:

- *Front-end evaluation*—Before an exhibit project gets underway in detail, study the current state of the potential audience. Developers can find out what visitors know, what their expectations are, and to what extent their vocabulary describes a particular exhibit topic.
- *Formative evaluation*—During exhibit development and draft label writing, evaluations can fine-tune texts to make sure that directions, information, and vocabulary levels are being expressed appropriately for the audiences that will be using them.
- *Summative evaluation*—Once the exhibition is open to the public, evaluations of the whole context can reveal areas that need further refinements that could not have been anticipated earlier (also called remedial evaluation). Evaluations after opening also give researchers the opportunity to test hypotheses about visitor use and impacts and make comparisons of exhibition success.

Evaluation is about making improvements. If all you want is praise, skip evaluation, and do a peer review by hand-selected people who will only tell you what you want to hear: "Beautiful installation," "Stunning presentation," "Best collection west of the Mississippi." But if you want to do a better job, and you can face a little constructive criticism, evaluation can lead to making a better match between what you want to achieve and what actually might happen. Learning to ask for and listen to criticism is a great skill to cultivate.

IN PRAISE OF SMALL SAMPLE SIZES

Often museum practitioners who have not done much of any kind of evaluation ask, "How many people do you need to have in your sample?" They are probably thinking of the type of marketing studies that require thousands or

at least hundreds of samples. The answer depends in part on what you are trying to find out (what your question is), how varied visitors' answers are, and how you plan to use the information or data.[4] Most front-end and formative evaluations are fine with small samples. For example, consider the question, "Do visitors understand the term *baroque*, and can we use it in our labels without defining it?" This could be answered by testing a large sample (n = 200) to enable you to make a generalization about the museum's audience in general; that is, what percentage of the people understand the word. If that percentage is large enough, you might go ahead and use the term, making a decision based on numerical, or quantitative, data. Alternately, a small sample (n = 20) could be interviewed to get qualitative data about what words visitors associate with *baroque*. Developers can then use that information to write sensitively, weighing whether it is necessary for visitors to understand the precise definition on a case-by-case basis when the word is used.

Many exhibit evaluation decisions are based on qualitative information gathered from small samples of interviews or observations. This is appropriate and useful, but often the decisions for one exhibit cannot be transferred to a new situation because of the unique set of variables within each specific exhibit situation. Only after doing lots of small evaluation studies and reading about studies done by others can museum practitioners build up a personal base of knowledge that allows them to make informed critical judgments about new situations. Too often, however, there is a tendency to jump to conclusions about all visitors based on one case study or even a single anecdote (n = 1). When you hear your colleagues say, "Everyone did X" or "No one did Y," be suspicious: They are probably generalizing inappropriately. Ask them, "What data was your evidence for this conclusion?"

FRONT-END EVALUATION

Finding out what visitors think and what they expect at the beginning of a project—front-end evaluation—can help shape the exhibit's big idea, communication goals, educational objectives, and the vocabulary and examples that will resonate with the largest percentage of the audience. Evaluation results do not tell curators what the content should be, nor do they tell designers what the exhibit should look like, but the team can make decisions based on data from studies that will help direct the content and the design to improve the exhibit's ability to communicate effectively.

Front-End Interviews

Brief face-to-face interviews (less than five minutes) with a small, diverse sample (in age, gender, social group, prior experience) of casual visitors about new exhibits in the planning stages can provide useful information. For example, the evaluator can read visitors a sample of text, or show them a series of vocabulary cards or photographs, and ask them, "What comes to mind when you see or think about X?" This will quickly give useful feedback necessary to make plans, adjustments, or edits.

Field Museum conducted front-end interviews in front of American mammal dioramas before the diorama hall was renovated. Visitors' comments became high-priority verbiage that was incorporated in the different forms of interpretation. Notice in these examples how the information that was gathered in the interview was matched with a modality for presenting it:

> What visitors said: "How big are those guy's antlers?" What was done: Label for large moose diorama said, "His antlers measure six-and-a-half-feet across!"
>
> What visitors said: "Maybe they are going extinct. We don't have them running around North America anymore, do we?" What was done: Video for bison diorama included footage from *Dances with Wolves* depicting herds being slaughtered, plus historical photographs and narration about the status of bison populations today.
>
> What visitors said: "What does it look like inside what the beavers are building?" What was done: Illustration at beaver dam diorama showed cutaway view of beaver lodge.
>
> What visitors said: "The deer are looking at something down the hill, like they hear something, or are startled." What was done: Audio label for mule deer diorama said, "Maybe they heard a cougar down the canyon."
>
> What visitors said: "They are headed somewhere. Are they migratory?" What was done: Button-activated electronic label showed yearly migration pattern of caribou at caribou diorama.
>
> What visitors said: "It looks like a family." What was done: Label at bear diorama said, "It is rare for a female to let the male get this close to her cubs" and explained why.

These visitor comments and exhibit element responses were above and beyond the most common questions of "What is it?" and "Where does it live?" Those topics were addressed by maps and labels.



FIGURE 18.1
"What are the deer looking at?" Talking to visitors before an exhibit is renovated can yield good ideas on what to include in the new interpretive labels. This dialogue works with all types of exhibits—for dioramas, objects, art, or phenomena.

In some cases, it is necessary or desirable to interview people off site (potential visitors or new audiences) to find ways to appeal to and relate to their interests and knowledge. This fulfills the objective of looking for the common denominators of knowledge in an audience more diverse than that of on-site visitors. For example, in a front-end evaluation for an exhibit about water in California, four groups of audiences were sampled: visitors to the museum, students on a nearby city college campus, people on a downtown street corner at lunchtime, and youth in a local mall. When asked a series of questions about where their drinking water came from, the only word that they all used in common was *reservoir*. This concrete, familiar concept could then be made the focal point for the exhibition's discussion of other aspects of the topic, such as: water sources—how water gets into the reservoir in the first place; water transport—how water gets from the reservoir to your house; and water use—the level the reservoir water goes up and down during different times of the year and over the years. Knowing that many visitors would share the concept of "reservoir" gave exhibit planners a focal point from which to work.

Findings from brief front-end evaluation interviews at the Brooklyn Historical Museum gave exhibit planners a wealth of data about visitors' experiences, emotions, and expectations to help them plan a new exhibition on the history of the development of penicillin in Brooklyn. To find out what visitors knew about the topic, a sample of visitors was told that the museum was making a new exhibit called *Manufacturing a Miracle: Brooklyn and the Story of Penicillin*, and then they were asked one open-ended question, "What would you expect to see, do, find out about, and how would you feel in an exhibit about that?" Most interesting were their responses to how the exhibit might make them feel. People said they would feel pride in Brooklyn for being important in the story of penicillin; they expected to feel more knowledgeable, interested, and "more confident about what I know about penicillin." Stronger emotions were also reported: "I'd feel very emotional because it saved my dad's life." "I'd feel sad, for the people who have suffered illness." "I'd feel anger—I wish they knew then what we know now about preventive measures." These rich, affective expressions gave concrete direction to the text and images for the exhibit development process, as developers could ask themselves: "Where in the exhibit will visitors feel sadness, anger, hope, and surprise? Where could the exhibit design present the fascinating process of penicillin discovery and refinement? Where will the question about the difference between finding a cure for a bacterial disease and a viral disease be discussed?" The front-end interviews revealed visitors' basic emotions and questions to which the exhibition narrative and label writing could be tied. The thing I like most about this example from *Manufacturing a Miracle* is the quick and simple way the front-end evaluation was able to reveal how visitors imagined that the exhibition would fit into their intellectual and emotional viewpoints.

Asking visitors what they think, notice, feel, or want to know does not mean that visitors tell the museum what to do or say. There are many things visitors ask about that do *not* get included in the interpretation. But exhibit developers can be sensitive to visitors' questions, assumptions, prior knowledge, and feelings and tailor the exhibit interpretations, when appropriate, to their needs.

Focus Groups

Another common method for doing front-end evaluation is focus groups. Focus groups provide a wealth of quotable quotes and anecdotes, and some

museum staff can comprehend the findings more easily than the numerical data summarized from surveys or interviews.

Brief interviews take much less time to plan, conduct, and summarize than focus groups, but both techniques require training for the person conducting them. Focus groups have more complicated and expensive requisites: to recruit, follow up, and pay participants (or provide a gift); to rent a room with an observation area and video equipment; to hire a professional facilitator if no one is experienced in conducting a focus group; to provide refreshments; and to transcribe and summarize the results of the feedback.

Visitors in focus groups are often highly motivated (and paid) to talk about their perceptions and expectations. In group discussions, participants may even project attitudes and intentions that museum practitioners want to hear. There are no penalties for exaggerating, and participants are under no obligation to tell the truth or actually do what they say. For good advice on how to conduct them, see *Focus Groups: A Practical Guide for Applied Research* by Richard Krueger.[5]

In focus groups, facilitators probe for breadth and depth of qualitative information that can provide rich, detailed data. Nevertheless, focus groups are just one form of evaluation. Like every methodology, they have their limitations. A single focus group provides feedback from eight to twelve people, although one strong voice or opinion can sway the group. And because they are expensive and time-consuming to conduct, a larger database may be difficult to build unless financial sponsorship is available.

Visitor Panels

Another method is called visitor panels, which uses small groups of people who are representative of potential audiences who meet several times over a period of weeks or months to review and comment on ideas, existing exhibits, or mock-ups of proposed new ones. Staff members get to know visitor panelists better than focus group participants (especially if they're on the other side of a one-way mirror) because the same group of visitor panelists return two or more times, allowing staff members a growing understanding and appreciation of visitor perspectives. Although staff members don't participate in visitor panels other than to introduce themselves, visitor panelists get to see how interested staff are in hearing visitor feedback. Another advantage of visitor panels over focus groups is

CASE STUDY

USING VISITOR PANELS

by Daryl Fischer, Principal, Musynergy Consulting

With attendance at the Alexander Ramsey House declining for the last decade, the Minnesota Historical Society needed to reinterpret the site so that it would be culturally relevant and financially sustainable. But how do you make an eleven-thousand-square-foot French Second Empire-style mansion built in 1872 meaningful to twenty-first-century audiences? And how do you tell the story of its owner—a rich, politically ambitious white guy who dealt harshly with Minnesota's Indian tribes—in a way that resonates in a diverse community?

Because of a "change or die" situation, the house and its well-documented collection provided the opportunity to tell stories that addressed the good, the bad, and the ugly of Alexander Ramsey. Exhibits and programs that had been developed without systematic audience evaluation provided the opportunity for staff members to incorporate the perspectives of visitors and nonvisitors in their planning. One of the evaluation methods we chose was visitor panels, which are the focus of this case study.

Three groups worked in an iterative process of presenting, listening, prototyping, and gathering feedback about new interpretive strategies.

- The *staff team* included three members of MHS's Historic Sites and Museums Division, the Ramsey House site supervisor, and the project manager. This core group worked with the consultant team, which included Joel Lefever and Mary Kay Ingenthron, to envision new possibilities, developing label drafts and prototypes to present to visitor panelists.
- The *Advisory Steering Committee* included other MHS staff and members of the site's friends group, members of St. Paul's African American and American Indian communities, neighbor-

hood residents, a curriculum specialist, and a tourism industry professional. This group observed visitor panels and met afterward to debrief and brainstorm ideas with the staff team.

- The *visitor panel*, recruited by a local market research firm to reflect the demographics of the Twin Cities metro area, included five men and seven women—two Asian Americans, one American Indian, one African American, one Hispanic, and seven Caucasians, who ranged in age from midtwenties to midsixties. This group returned twice to give their feedback.

At the first meeting, which focused on front-end issues, staff members gave them a typical tour of the house. Though impressed with its "modern" features such as the hot water heater and speaking tube, several panelists weren't sure what to make of it all.

"As I walked through the (first) tour I found myself asking, 'Where's the meaning?' other than me looking at a lot of rich guy's stuff."

At the second visitor panel, which addressed formative issues, visitor panelists weighed in on potential themes, interpretive tools, and programming ideas, which evoked animated responses.

"This guy managed to die a distinguished old man. It wasn't until I hit that immigration discussion . . . that I found meaning in this experience. I think this is an opportunity to teach some very powerful lessons. We shouldn't hide from this stuff."

One exhibit, meant to address Alexander Ramsey's conspicuous consumption, compared the family's home, furniture, and clothing with those of average Minnesotans during the time. Prototype labels and exhibits juxtaposed the wedding dress of daughter Marion Ramsey with a dress that belonged to cook Annie Robertson, and it compared the cost of the Ramsey piano to a farmstead. Stanchions in the parlor that showed the floor plate of a sod house elicited the following comments:

"I really liked how the roped-off area was the size of a sod house."

"I think it would be interesting to step inside a sod house after you've been in the Ramsey House, just to get a real perspective on the other side of town."

Brief questionnaires asked panelists to agree or disagree with the statement "The comparisons changed my perspective on the house." Most agreed strongly, and comments included:

"I knew the Ramseys were wealthy but didn't realize how poor others were."

"Made me wonder what comparatives there would be today and where the Ramsey House would be on today's spectrum."

The scores and comments made it clear to staff team members that addressing the difficult legacy of Alexander Ramsey did not detract from the experience; in fact, it heightened the relevance of the site and piqued visitor panelists' interest to learn more. The majority agreed strongly with the statement "This history is relevant to us today."

"It's very honest the way you told the story. It's a good thing to know about him."

"I was haunted by what happened in that office. In the spirit of truth, . . . it's a great historical archive. But to assume that these things didn't happen in this house? I think it's a great opportunity to set the record straight."

Visitor panels played a significant role in creating a new interpretive plan, increasing attendance, and gaining national recognition. (In 2013, the project won an Award of Merit from AASLH and an Honorable Mention in AAM's Brooking prize for a paper written by the project manager.) But from my perspective, the biggest benefit was in making audience evaluation a routine part of planning at the Ramsey House and other MHS sites, including the Charles A. Lindbergh Historic Site in Little Falls, Minnesota.

that visitor panelists are taken into museum galleries to prepare for the discussion, which makes the conversation rooted in real, rather than hypothetical, experience. They are asked to record their responses while in the galleries, which helps them register their opinions and be ready to air them in the discussion.

Front-end evaluations of any type that probe for what visitors know are very relevant to label writers. This information will be useful for creating interpretive opportunities for visitors to make new connections and to recollect old ones—what visitors are concerned about, what knowledge they feel confident about, what they are less certain of, or what misconceptions they have. Front-end surveys that ask visitors only to state likes, dislikes, income levels, zip codes, or other target marketing questions are less useful to exhibit designers.

Whatever type of front-end evaluations are done, do them early enough in the planning stages so that relevant information can be incorporated along the way.

FORMATIVE EVALUATION

Common sense will get you a long way toward predicting what will work, but to understand more thoroughly and specifically what visitors think, feel, and know requires some form of data gathering. Even something as simple as a label that lets visitors know that they can touch an object or an iPad will require some form of testing with visitors, and it might take several versions to get to the right one.

Formative evaluation, also called prototyping, during the development of individual exhibit elements will improve the chances that they will achieve their intended objectives. Formative evaluations enable specific ideas to be fleshed out, communication goals to be refined, texts written and edited, and text and images to be rearranged to go together better. In addition, exhibit developers can attend to a wealth of physical and mechanical details. "Prototyping, the practice of building low-fidelity representations of products, services, or experiences in order to learn and test before proceeding, is at the heart of the human-centered design process."[6]

Testing Label Copy

The first thing to do is get the label to the point where the developers are satisfied with it. There is no point in testing something you already know has problems. You'll be wasting your time and visitors' as well. Do your best to lay out the text as you'd like to see it in the gallery, including paragraph breaks and line lengths. It won't be final design, but text editing and style issues that may have not been worked out in the rough drafts of the label text will become obvious when the label is made larger and placed in its context. It is always amazing to see what you notice when the label is mocked up in full

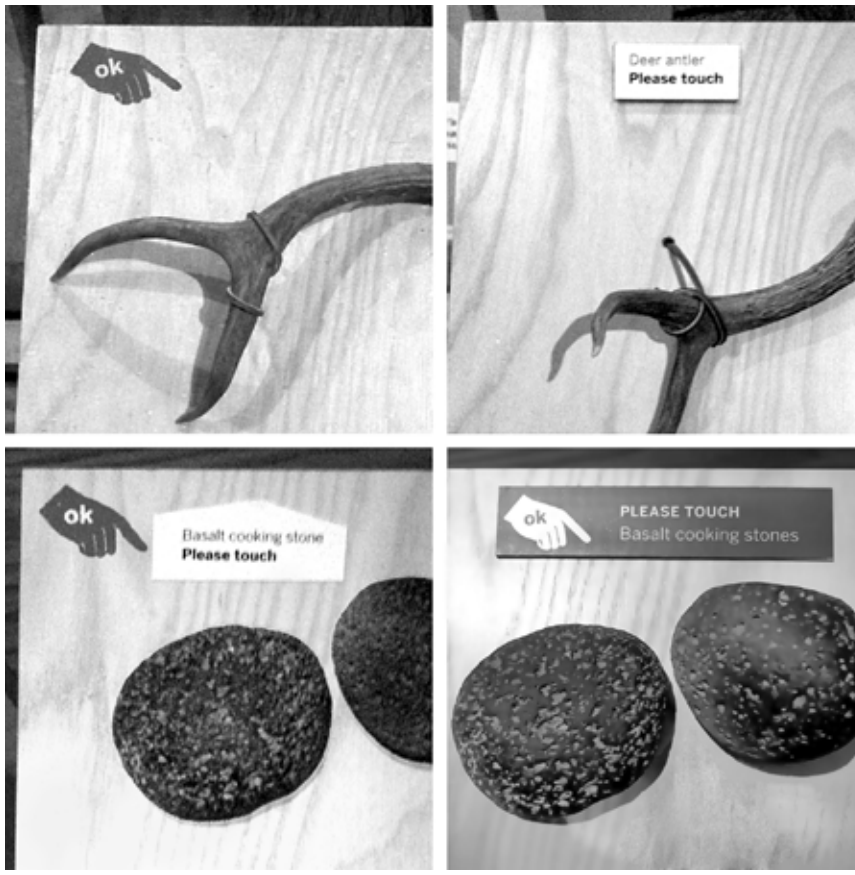


FIGURE 18.2
What's the best way to tell visitors it's okay to touch? The photos show the evolution of an effective "please touch" message after several versions were tried out.

size that you overlooked while it was on the computer screen. You should be evaluating something you like and think is good. Visitor feedback helps you make it even better.

Before asking visitors to review a label, you need to ask yourself

- Is the text put in "chunks"; that is, one separate thought at a time?
- Is there one phrase per line, or are there natural line breaks?
- Does it look easy to read? (Big enough? Short enough?)
- Are there visuals that would help communicate the ideas?

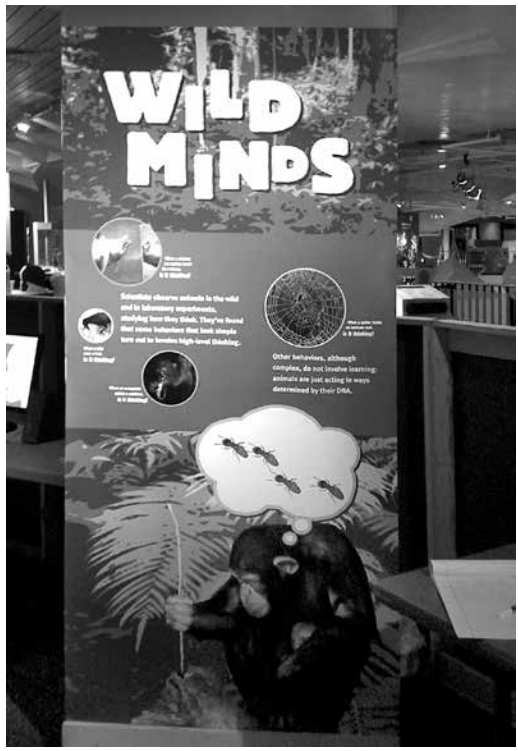


FIGURE 18.3
In the first full-scale mock-up of the opening panel for *Wild Minds,* the ants were too prominent and the four themes were buried.

When it is ready to test, questions such as these can be used as a checklist, as actual visitors react to inexpensive mock ups:

- Do they like it?
- Do they think it's fun?
- Do they understand it?
- Do they find it meaningful?
- Does their understanding coincide with (or at least, not contradict) the stated communication objectives for the element?
- Does it give the user a sense of discovery, wonder, or "wow"?
- Do visitors have trouble with jargon, unfamiliar technical terms, or words with double meanings?

In a case where the exhibit developers were trying out an introductory label, a full-sized, color prototype was created. Some unintended messages

seemed to be coming through, and the ideas were not in the right balance. Weaknesses in the choices of words and images were refined. The revised panel had a clearer hierarchy in the purposes of the different forms of graphics.

Testing Interactive Labels and Exhibit Elements

For interactive exhibit elements, or even just a label that asks visitors to do something, formative evaluation is essential to success. Cueing visitors—asking them to look at the mock-up and talk with you about it—works well in many situations. Visitors have the ability to ignore the crudeness of a paper mock-up, and they are willing to play along with taped-together versions of an interactive. If the quality is too high, visitors get distracted by some aspect of the design that isn't part of the issue being tested, or they are less willing to give open and honest feedback because they think the prototype is already



FIGURE 18.4
In the final version of *Wild Minds*, the thought bubble was linked to the title, and the four themes were more obvious.

finalized and they don't want to hurt your feelings by being critical. Remember, you are testing the exhibit's ability to communicate the content, not the aesthetics of the label or device. Prototyping lets you know if the element is capable of getting the point across.

Single exhibit elements can be tested alone, or a group of interactive exhibits can be tested together in a dedicated space. This is helpful for when the elements have some similar themes or design features. Some museums have set aside a space or designated a room full-time for testing prototypes.

Formative evaluation of interactives helps to answer questions about mechanics, instructions, content, and visitors' intuitions, including:

- In the label or instructions, are the first things first (i.e., what has to happen first), and are the most familiar things first?
- Does it mechanically function without breaking?



FIGURE 18.5
The Anchorage Museum set up seven interactive prototypes in a classroom to test them with visitors. The findings inspired changes in the design and content: better wording, shorter labels, and more effective placement.

- Does it mechanically function without hurting someone?
- Can visitors correctly figure out how and where to start the activity in 1.5 seconds or less?
- Is the reaction or response of the interactive intuitively clear to visitors?
- Can people follow the directions? Are the directions in three or fewer steps?
- If visitors act intuitively, are they doing the right thing?
- Can visitors figure out what to do without reading anything?
- Do the visitors' actions reflect and/or imitate the phenomena or concept?
- Is the reset or reaction time what it needs to be (fast enough, slow enough)?
- Do the words in the label accurately describe and/or name the structures (mechanisms) of the exhibit?
- Do the words in the label match (accurately describe and/or name) the actions and activities that the visitor engages in?
- Are symbols, graphics, and/or animation needed to model the actions and structures or mechanisms?
- Does the challenge of doing the activity match most visitors' skill levels while still requiring them to "stretch" a little?
- Is visitors' attention focused, and are the visitors absorbed in the experience?
- Do people feel anxious about the content or setting?

Many of the above questions can be discussed by the exhibit developers and label writers themselves, and should be, before testing begins to help focus the team on the issues that formative evaluation can inform.

In the prototype for a complicated interactive exhibit called *Nerve Speed Indicator* at the Exploratorium, the first version of the label text started with "Read this before starting." The evaluators decided to use a diagram with the label copy to communicate the directions more clearly about how visitors should position themselves in the chair.[7]

Formative evaluations of mock-ups of interactive devices can reveal simple things—like the need for changing the position of one object or substituting one word—or testing can make the difference between misunderstanding and comprehension. For example, formative testing found that visitors could make comparisons between bird feathers more easily when all the feathers were from the same wing; for example, comparing a right wing feather from one bird with the right wing feather from another, not the left wing. In another case, two samples of elephant hide (one real, one fake) had to be dyed

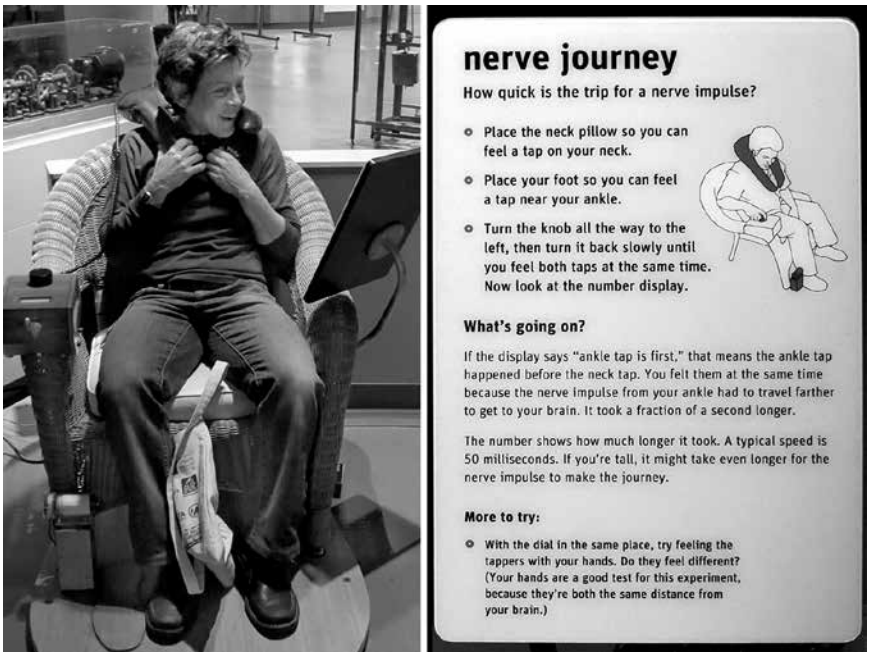


FIGURE 18.6
How quick is the trip for a nerve impulse traveling from your neck or ankle to your brain? Multiple iterations of the label's directions and the way the electronics worked resulted in a successful visitor experience.

the same color so that visitors could concentrate more easily on texture and pattern, which were the determining factors, not the color.

Testing and retesting with cheap versions and rapid prototyping, making improvements at each iteration, is far preferable to sinking big bucks into one glitzy prototype. Although aesthetics are an important component of the total exhibition experience, they are best assessed after the exhibition is completed, during summative evaluations. The main purpose in formative evaluation is to test the ability of the exhibit element to communicate in words and graphics. Visitors' reactions to mock-ups will predict, but do not give complete assurance of, the exhibit's communication effectiveness in the finished product. The variables of context, final design, sightlines, lighting, and other factors will contribute to its success in the end. But formative evaluation can lead to a greater sense of confidence that the exhibit will work in the actual installation.

Observe, Refine, Test Again

When visitors don't understand a label or how to operate an interactive, some museum practitioners jump to the conclusion that the visitors were stupid or the exhibit wasn't meant for them. If visitors were comparing the mount that the object was sitting on instead of the object, there's something wrong with the exhibit, not the visitors. When visitors do the wrong thing, it's most likely because the exhibit affords the "wrong" behavior more than it provides the conditions for the appropriate behavior.

Many ergonomic factors can only be determined by observing visitor behaviors. If visitors are using exhibits in inappropriate ways, careful observations can often reveal why and solutions will present themselves. Often the first impulse to solve the problem of getting users to follow the right steps is to add another label to explain it. In a recent case at the Field Museum, the exhibit developers tested seven different label versions for an interactive element, none of which achieved the desired results with visitors. More words were not the answer; a redesign was needed.

What happens during formative evaluation if the designers and the visitors have different opinions? In a test of a rotating, six-sided label, the designers



FIGURE 18.7
Pull the wheel toward you or push it away—which is most natural? Trying it out with visitors answered the question: Pull.

had wanted to number the sides one through six as the wheel was turned away from the person standing in front of it. This format was logical if you think of the label as a long, flat piece of paper with number one at the top of the paper, followed by two, and so on, that gets wrapped around the wheel. After watching visitors use the rotating label, however, it was clear that visitors were more likely to turn the wheel by pulling it toward them than by pushing it away. Designers changed the layout to be consistent with the visitors' actions, not the designer's intuitions. But it was not an ego contest, because everyone had agreed from the start that some decisions would be made by watching, not guessing, what visitors would do.

Unless there is good communication within the whole exhibit team, findings from formative evaluations might never be seen by the designer, especially if the exhibit is being designed by outside consultants. The ease of keeping people on track and up to date on a fast-moving design schedule is inversely proportional to the number of people involved and the distance between their desks. Sharing files online is a good idea, but it still relies on people to actually take the time to read them. If possible, get designers and developers out on the floor to help observe visitors and collect the data that will be used to make decisions.

For a broader discussion of front-end and formative evaluation and ways to answer many of the questions and issues raised in this chapter, see the books *Try It! Improving Exhibits Through Formative Evaluation*, *Doing It Right: A Workbook for Improving Exhibit Labels*, and *User-Friendly: Hands-On Exhibits That Work*.[8]

We have seen in this chapter how front-end and formative evaluations during the planning and design phases of making an exhibition give exhibit developers information while there is still flexibility in the plans and time to make changes. Once the exhibition opens, there is usually little or no staff, time, or money available for remedial fixes. Unfortunately, the reverse is true of the evaluation schedule and budget, which is often specified for one big final summative evaluation instead of several shorter responsive studies during development, when visitor studies can do the most good. While evaluations done after opening may have implications for the future, they often have less value than front-end or formative studies, whose recommendations can also be acted on immediately.

Summative evaluations have the advantages of reviewing visitor experiences in the context of the whole exhibition, providing an overall look at how well the exhibition achieved its goals and detailing specific areas that need work. In ad-

dition, if done with systematic, universally valid tools, collaborative studies can offer opportunities to share data among institutions. These two possibilities will be discussed in chapter 21, but before that, let us consider two more important tasks—typography and fabrication—that go into producing good interpretive label methods that generate durable, attractive products.

NOTES

1. Thomas J. Brennan, "Elements of Social Group Behavior in a Natural Setting" (master's thesis, Texas A&M University, 1977).

2. Getty Center for Education in the Arts, and J. Paul Getty Museum, *Insights: Museums, Visitors, Attitudes, Expectations: A Focus Group Experiment* (Malibu, CA: J. Paul Getty Trust and Getty Center for Education in the Arts, 1991).

3. Harris Shettel, personal communication. Shettel has had a long and influential career in museum evaluation and has published extensively. An early paper that clearly articulated the issues was "Exhibits: Art Form or Educational Medium?" in *Museum News* 52, no. 1 (1973): 32–41.

4. For advice on small sample procedures, see Ross Loomis, "Small-Sample Techniques in Project Evaluations," in *The Denver Art Museum Interpretive Project* by Melora McDermott-Lewis (Denver, CO: Denver Art Museum, 1990), 129–32.

5. Richard A. Krueger and Mary Anne Casey, *Focus Groups: A Practical Guide for Applied Research* (Newbury Park, CA: SAGE Publications, 1988).

6. Dana Mitroff Silvers, Emily Lytle-Painter, Ben Hamley, Yen Trinh, Jack Ludden, and Ahree Lee, "From Post-Its to Processes: Using Prototypes to Find Solutions," in *Museums and the Web 2014*, ed. N. Proctor and R. Cherry (Silver Spring, MD: Museums and the Web, 2014), accessed June 19, 2014, http://mw2014.museumsandtheweb.com/paper/from-post-its-to-processes-using-prototypes-to-find-solutions/.

7. Lisa Sindorf, "*Nerve Speed Indicator* Formative Evaluation" (unpublished report, Exploratorium, 2012).

8. See Samuel Taylor, ed., *Try It! Improving Exhibits through Formative Evaluation* (Washington, DC: Association of Science-Technology Centers, 1991); Barbara Punt and Susan M. Stern, *Doing It Right: A Workbook for Improving Exhibit Labels* (Brooklyn, NY: The Brooklyn Children's Museum, 1989); Jeff Kennedy, *User-Friendly: Hands-On Exhibits That Work* (Washington, DC: Association of Science-Technology Centers, 1990).

19

Typographic Design

Because typography affects both the mood and the message, label writers and designers must agree on how the type will look in the final production.

Typography denotes the style, arrangement, and appearance of the text. Graphic designers, by training, understand the principles of mass, form, shape, and line through the use of traditional tools. Although designers are usually the ones who decide about typography, most label writers find themselves confronted with typographic decisions at some point.

Label writers need to understand at least the basics of typography and legibility, because printed words exist as visual and verbal entities to the reader's eye and mind, and the traditions of typography are the basis for creative new ideas.

Created on a computer—using word processing and desktop publishing programs to edit and lay out label texts on screen—copy can go from the screen to final production without being typeset by a person trained in typography or graphic design. WYSIWYG ("whizzywig") means "what-you-see-is-what-you-get." Writers, therefore, need some working knowledge about type to give them the skills and tools to communicate their messages most effectively.

Computer and desktop publishing programs have put powerful and affordable tools into the hands of hordes of amateurs. But just because the

computer allows stretching, compressing, slanting, and shadowing and even creating new and unfamiliar letterforms, doesn't mean you should. People without knowledge about typography and design—or people born without "designer genes"—can learn about typography and how to use the computer skillfully, but not without time and effort.

Another frustrating, all-too-common fact is that the label writer's efforts—researching, writing, editing, testing, editing again, testing again, getting approvals, and delivering final copy—can be torpedoed if the designer sets the text on a low-contrast background or puts the label behind the door or in the dark. Many graphic designers graduate without a good grasp of typographic design. "It's one of the hardest things to learn, and it takes a long time," says Pasadena Art Center graphic design teacher Rachael Mendez.

THE LANGUAGE AND FUNDAMENTALS OF TYPOGRAPHY

Legibility, readability, appropriateness, design, and effectiveness are all influenced by typography. The elements that make type easy to see (legible) and to read (comprehendible) have been investigated by psychologists, traffic engineers, elementary education specialists, ophthalmologists, researchers for the special needs of the handicapped, graduate students, and others. These researchers have employed a variety of methods in their investigations, ranging from tests on the effects of distance, to counts of eye movements, the measures of the rate of blinking and heartbeats when people read, and studies of visual fatigue.

This research—most of which results in commonsense decisions—seems to have not widely influenced museum label practices, judging from the frequency of poor typography, such as tiny print and long line lengths. Do the museums that get awards in the publications category of the American Alliance of Museums' design competition (involving catalogs, posters, press kits, brochures, newsletters, and books) spend as much time, effort, or money on the words on the walls in their galleries? Not always. But this is changing. For instance, the Getty Museum and the Exploratorium have created guides for gallery texts and graphics, in which they detail the word count and recommended font for their standard gallery label types.[1] The Exploratorium advises "keep it clean and clear," and for all gallery text in their new museum they invented a unique font called "Explo." The Exploratorium isn't alone in creating its own font. The Whitney Museum of American Art commissioned

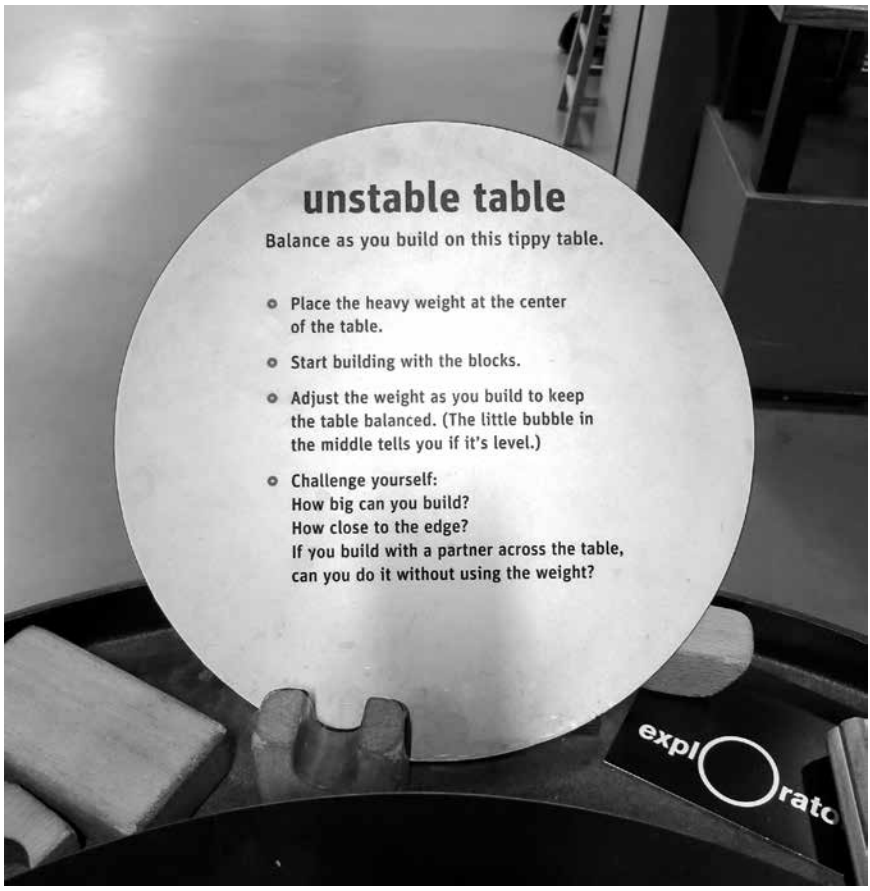


FIGURE 19.1
The Exploratorium's sans serif font is easy to read. Bold titles are set in lower case, per the house style.

Hoefler & Company to design a unique typeface for them in 1996.[2] The Smithsonian's Cooper Hewitt also created a new typeface for their late-2014 reopening.[3]

The Liberty Science Center "Interpretive Graphic Standards" is an excellent primer on graphic design in a museum setting.[4] Conduit is the Liberty Science Center's brand font and also serves as the default headline or title font for exhibitions that have not been assigned a special characteristic typeface.

Below are suggestions for an inexperienced or beginning typographer. Different guidelines apply to body copy (running text, in paragraphs) and titles or headlines (a few words, in one line).

THE LEGIBILITY OF BODY COPY

The ease with which a person can recognize and comprehend words and symbols is called legibility. Good legibility is influenced largely by familiarity—we can recognize something we know more easily than something strange or unfamiliar.

There are many typefaces to choose from that offer excellent legibility for the body copy of museum labels. Styles that have been in use for a long time in books, newsprint, and journals include Times Roman, Bodoni, Caslon, Century Old Style, and Clarendon. These faces are easy to read because they are so common.

Times Roman

Bodoni

Caslon

Century Old Style

Clarendon

The default font for the Kindle e-reader is PNM Caecilia, which is similar to Times New Roman. The newer Kindle Paperwhite allows readers to choose between a mix of serif and sans serif fonts: PNM Caecilia, Baskerville, Futura, Helvetica, and Palatino.[5]

PNM Caecilia

Baskerville

Futura

Helvetica

Redesigning typefaces created for hot and cold type (metal and phototypesetting) for computer bitmaps can change the aesthetics of a typeface's design.

Hermann Zapf was the original designer of Optima, which is characterized by delicate curves and near-vertical lines and is difficult to represent digitally. He called the digitizing of his popular typeface "a heartbreaking compromise." "If I had been asked," Zapf wrote in 1985, "I would have done a new design and tailored it to the needs and limitations of today's equipment."[6]

In the late twentieth century, type styles were created specifically for use with computers and laser printing. These styles were designed to minimize the amount of memory and storage needed by the computer to produce the letters. Type designer Zuzana Licko embraced the early limitations of the first Macintosh's coarse, low-resolution bitmap screens and printers, and she invented many typefaces including Emperor, Oakland, Universal, Émigré, Matrix, Senator, and Totally Gothic.

Children who have grown up using computers are far more used to reading on-screen text than adults who learned to read before the 1980s. What looks "normal" and legible to them may seem ugly and crude to adults who are accustomed to reading finer resolution print typography. Given the burst of new graphic design capabilities unleashed by smartphones, e-readers, and hand-held tablets, legibility issues are changing as we speak.

COMMON QUESTIONS ABOUT TYPOGRAPHY

The context in which the label will be produced and read is an important factor to consider when selecting typefaces. Legibility of typefaces will be influenced by type size, word spacing, letter spacing, line spacing, distance, color combinations, and lighting. When all of these factors are known before choices are made, the final result will work better.

Frequently asked questions about legibility for museum labels include: Should the typeface be serif or sans serif? Is bold better? Which is more legible: black on white or white on black? What size should the type be?[7]

The "rules" discussed below are general guidelines that a person skilled in graphic design and typography can ignore. But a person who is not experienced with making type legible should heed them carefully.

Serif or Sans Serif?

Neither one is more legible than the other in all situations. The examples in this book from a wide variety of museums seem to contain more sans serif

type. The important thing to consider is this: Body copy type should allow the reader's eyes to glide smoothly in horizontal sweeps across the lines of type and find their way to the beginning of each new line easily. Vertical, compressed, or taller-than-wide typefaces, especially some sans serif fonts, can decrease legibility by overemphasizing verticality. Tight spacing between letters and heavy serif faces with small x-height (the distance between the base and midline of the text) can decrease legibility by making the words clump together.

Some serif faces are associated with more classical, sophisticated, or traditional looks. Sans serif faces are sometimes called "clean" or "modern." Trends or fads in typefaces, like fashions, can come and go. Helvetica, a face designed in 1957 by Max Miedinger, became popular as a legible body copy style and was practically an industry and government standard for highway and airport signage. Because of its extensive use, the plea "anything but Helvetica" was the slogan in some graphic design circles by the 1970s. Popular font types for use in museums in 2014 include Whitney, Gotham, and Verlag.[8]

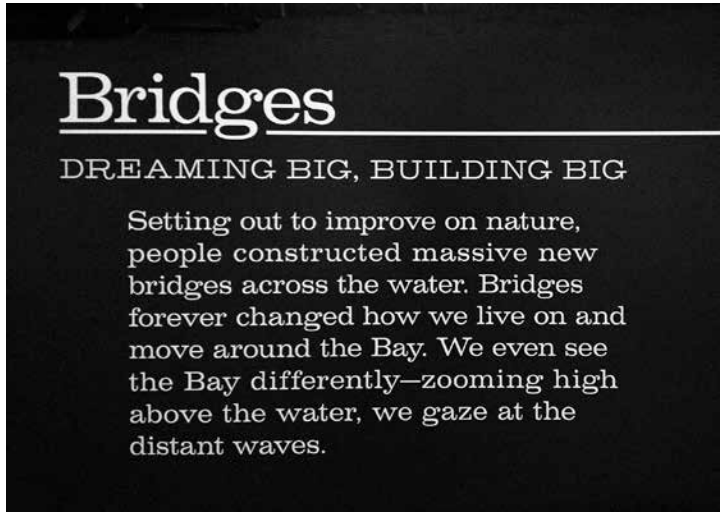


FIGURE 19.2
The heavily serifed type stands out against the dark background. Line lengths are kept short for easy reading. Different fonts are used for different exhibitions at the Oakland Museum of California.

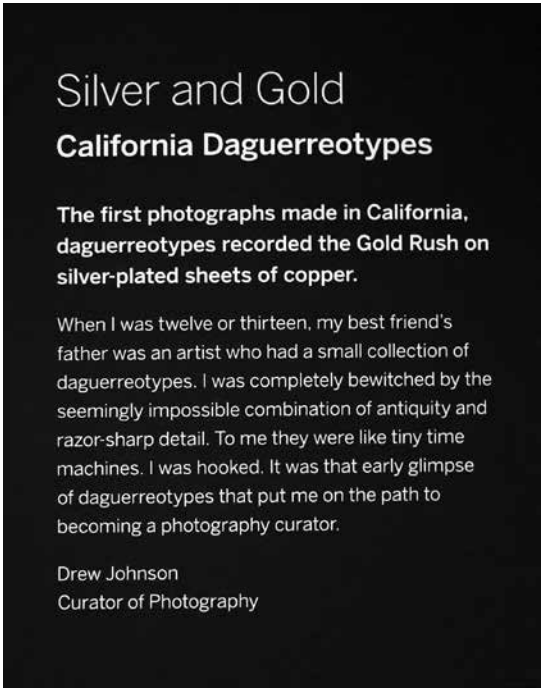


FIGURE 19.3
This layout uses clean sans serif type in larger and smaller sizes, and in bold and regular weight. Line lengths and spacing are optimal for legibility.

Serif or sans serif choices have more to do with the appropriate use of style than legibility issues. Some newer typefaces, such as Stone, have been designed with both styles as part of the same family. Other designers have created a serif and a sans serif face to be used together, such as Gerhard Unger's Demos and Praxis.

Skilled designers mix serif and san serif text with elegant effect. Gordon Chun, who has created gallery text for museum exhibitions since 1979, says, "I feel that used properly, both can be readable in paragraph form, and both can be emphatic as titles. The design of the text panel should be considered as a whole composition with choices of fonts, colors, and proportion working together to impart the appropriate thematic message."[9] Some of his preferred fonts include:

Serif fonts:

Garamond

Sabon

Bembo

Minion

Sans serif fonts:

Avenir

Gotham

Univers

Gill Sans

Frutiger

Boldface or Regular?

It is not an "or" question, really, because both have appropriate applications. Bold is often used for titles and display type, but it is not often recommended for body copy. Consider making body copy bigger rather than bolder for better legibility. Methods for producing label text that only allow for bold styles should be avoided because they will not give you the necessary flexibility for making contrast between titles and body copy, or text and credit lines. Also, boldface type takes up more space than regular.

Mixing bold and regular type in the same paragraph is not advisable. Some people use bold to highlight certain words or phrases for emphasis in the middle of a paragraph. To me it feels like boldface words hijack my eyes and interrupt the flow of my reading. On the other hand, in a label for a diorama exhibit, bold type for the names of the animals in the body copy is useful and not too distracting.



FIGURE 19.4
The label typography for the diorama includes the names of animals and plants in boldface. Thus, the label serves an ID as well as an interpretive function.

Black on White or White on Black?

When using reverse type (light type against a dark background), sans serif may be a better choice in the hands of an inexperienced designer because dark backgrounds can diminish serifs by squeezing them. If reverses are necessary for design or aesthetic reasons, body copy in paragraphs that is not too dense will help legibility because reading white or colored type on black backgrounds is more tiring to the eye than the opposite.

Contrast Rules

Most people prefer to read dark type against a light background, and the Americans with Disabilities Act (ADA) recommends always using as much contrast as possible, which is achieved best by black type against a white background. Regardless of the choice or combination of colors, the most

important thing is contrast. Many museums make the mistake, for aesthetic reasons, of having soft-looking labels, such as white type on gray type, or brown type on tan, which renders the labels less legible than they should be for the reader's sake. The aesthetics of typography (faces, colors, sizes)—the overall look and feel that the type gives to the design—must be balanced with the reader's need for legibility.

With backlit type (clear letters in black film, lighted from behind), sans serif faces are preferred because the light shines out and obscures or "smears" serifs. Backlit labels can be very tiring to read because of the glare. To reduce eye strain, put sheets or strips of colored gels (gray, blue, or combinations) behind the type, which will keep the light from glaring through.

What Size Type?

This question must be answered in the context of how the type will be used—its purpose, position, color, and lighting. Is it for a title, a caption, or donor information? How far will the reader be from the label? Is it backlit? Here are some general guidelines based on what I've heard visitors saying, and, as our population ages and senior citizens become a majority, the following specs are minimums!

For most people, 18 points is the minimum size of body copy type for caption labels that is *comfortably* legible at twenty inches away, from a standing position, with good lighting, using dark type on a well-contrasted, light background. Most captions should be printed larger, in 20- to 24-point type, unless visitors are likely to be very close to the label. For text that only contains one or two lines of copy, the minimum can be 12-point type. (For type specifications used in this book, see the colophon on the last page.)

For introductory copy, group labels, or texts that will normally be read at a distance of greater than eighteen inches, the type size should be 28 to 48 points, depending on the conditions of lighting, space, color, and typeface and weight.

Once type is larger than 36 points, however, bigger is not always better. The type needs to "fit" comfortably onto a person's retina.

LETTERS ON YOUR FOVEA

Normal reading distance for a seated reader is about twelve to fifteen inches and normal book or newspaper type is 8- to 12-point type. At that distance,

approximately four letters of type are projected by the lens of the eye onto the *fovea* of the retina, the place of clearest vision. Around the fovea is the area of peripheral vision, which can encompass about fifteen more letters in any direction as our eyes move along a line of type. Peripheral vision helps us anticipate what is coming into focus next—in terms of both legibility and readability.

Normal reading speed is about 250 to 300 words per minute, and eye movements consist of alternating sweeps and fixations along a line of type, with a return sweep at the end of one line to the beginning of the next. If a person is reading less legible material, the number of fixations increases and reading speed decreases.

Avoid large type (bigger than 36 to 48 points) if readers are expected to be only two feet away. Very large, close-up type forces the reader to see letters instead of reading words, and the reader's eyes have to make more fixations to perceive each word. This process is both tiring and distracting, because the eyes and the brain are geared to an expected, or normal, perception distance and reading speed. Slowing the eyes down allows time for the brain to wander. The reader has trouble concentrating.

This is why reading scrolling electronic type is so frustrating. Scrolling type on a billboard, computer screen, or television will commandeer your eyeballs. Your eyes are attracted by the moving red dots, but the speed of perception and recognition is far too slow for your brain. By testing actual-size labels in context (formative evaluation), you will resolve many size issues.

Other legibility tips for the novice designer include:

- Use uppercase and lowercase letters in body copy, not all capital letters. All-capital letters in most typefaces are less legible than upper and lower case.
- Use italics sparingly, not for body copy of more than four lines. Italics are less legible in some faces than others. If using long quotations, put quote marks around the type rather than use italics.
- Use ragged-right margins (not centered, not justified, not ragged left). Ragged-right margins will not require as much fine-tuning to make word spacing look even and to avoid "rivers" of space running vertically through paragraphs of type. Ragged-left margins make it difficult for the eye to find its way to the beginning of the next line.

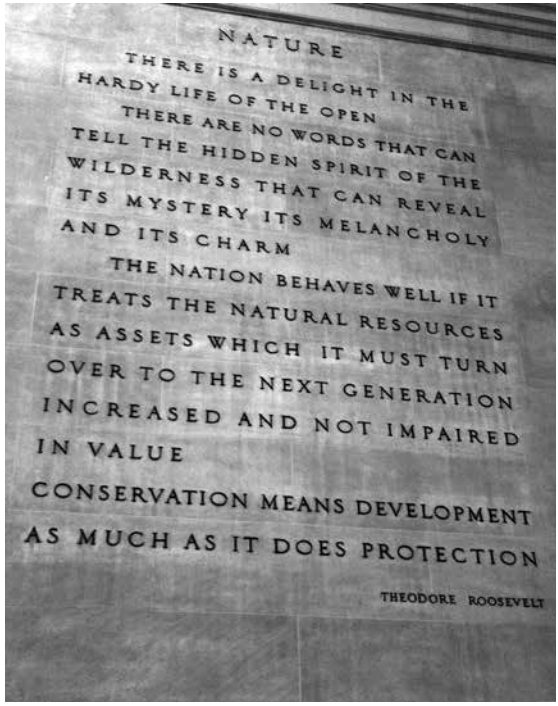


FIGURE 19.5
All uppercase type is best reserved for very formal statements, as on this wall in the entry of the American Museum of Natural History.

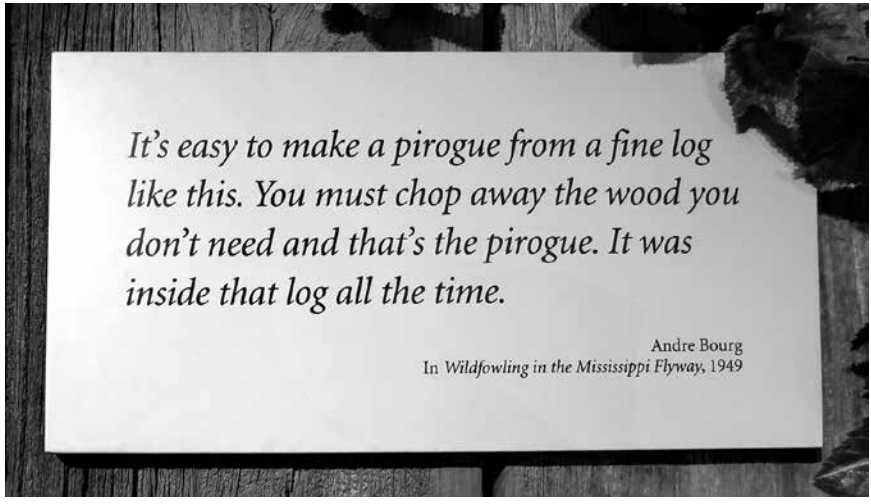


FIGURE 19.6
Quotes look good in italics as long as the letter size is large enough and there are not too many lines of type.

- Avoid hyphenating words at the end of lines. It makes for choppy reading. This is especially true for line lengths longer than fifty to sixty characters and larger type sizes.

The more labels in an exhibition, the more concern there should be about sticking to the guidelines, or taking a conservative approach and making them easy to read. In exhibitions with very few labels, legibility issues can be of less concern, although I would never recommend creating a situation in which the majority of visitors feel like they have to work hard to read the type.

The guidelines above will help an inexperienced writer get started using type creatively and effectively, but they are no substitute for experience and working with skilled graphic designers. Do not get overconfident at the computer with all those options for type fonts and sizes if you really do not know what you are doing.

TYPEFACES FOR TITLES AND HEADLINES

Guidelines for the use of typefaces in titles and headlines—called display type—are much more relaxed than for body copy. The acceptable variations are greater. Because headlines contain fewer words (e.g., one to six words, not in a full sentence), legibility and readability are not such important issues, while attracting attention is.

For titles and headlines, graphic designers have lots of display typefaces to choose from, or they can make one up. There are several questions to consider: Does the typeface create the mood or symbolize the meaning in an attention-grabbing header? Will it be legible enough while still looking interesting and intriguing? Is consistency necessary for all aspects of the graphic look, including the promotional marketing materials? Some museums restrict the choice to one typeface and use it for everything. This decision can be unifying in some cases, but very restricting in others. Ask yourself these questions on a case-by-case basis to decide which is best.

LINE LENGTH AND LAYOUT

Line length (the number of characters per line) and the overall layout of the body copy will affect legibility. In running text, the reader's eyes must be able to find their way from the end of one line back to the beginning of the next line. If it is difficult to find the continuation of the sentence, or readers get

lost or confused (e.g., get started at the wrong line), their minds will wander. The size, weight, typeface, leading, and number of lines can help or hinder this movement. Fifty to sixty-five characters (including spaces) per line is a reasonable maximum. It's also important to have enough words per line—at least five is best. Two- to four-word lines of text can look very choppy.

ONE COLUMN, TWO COLUMNS

Don't break sentences over two columns of text. To reduce the overall line length in a horizontal layout, texts can be broken into multiple columns of type. But designers should avoid making a common mistake that can discourage reading: columns that begin in the middle of a sentence. In books or magazines this is not a problem because readers of this kind of text are more "dedicated." Readers in museum exhibitions are scanning rapidly, with many things to distract their attention. Writers and designers need to work together



FIGURE 19.7
All of the lines of type in this introductory panel are set manually to improve the flow. The "who" in the last line of the first paragraph would fit on the next to last line, but it looks better and reads better on the line below.

to make the text fit into columns without these breaks and make it easy for readers to see the starting points, or jump from one text block to the next. In the following two examples, the first label breaks the second paragraph across two columns. In the second label, the text is written in four paragraphs to fit in two columns without being broken up.

The Ball Game

In Mesoamerican cities, architecture and public ceremony were closely linked. Pyramids, temples, and plazas were settings for various religious ceremonies, while ball courts were specially constructed for the Mesoamerican ball game. A combination of ritual, sport, and celebration, the ball game is a hallmark of Mesoamerican culture and a prominent subject in regional art.
The rules of the ball game varied by locale, but in the best-known version teams of players volleyed a solid rubber ball using only their hips. The object of the game was to send the ball past a goal, sometimes marked by a vertical stone ring on the ball-court wall.

Images of the ball game show clearly its symbolic meaning as a representation of the greater cosmic struggles between life and death, day and night, abundance and scarcity. References to death and human sacrifice are common and indicate that players did not always survive the game.

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MIXING TYPEFACES AND TYPE DESIGN

Since typefaces were invented, typographers have experimented with combining them, making and breaking various rules. Since digital computer type was invented, some typographers and graphic designers have gone wild with the possibilities. Few rules are sacred, and some designers flaunt the traditional rules of legibility as part of the past. Intertwining, overlapping, stacked, distorted type explores new aesthetics of tech-expressionistic text. Being radical, crude, unintelligible, angry, and anything-but-traditional is *de rigueur* for those who push the digital possibilities. New designs get copied and instantly mainstreamed, as the field races ahead.

A conservative, yet experimental, approach to typography—one that has positive implications for museum text—can be achieved by loosening up the formal formatting of type. Some ways to break the visual monotone:

- Get away from evenly spaced paragraphs with the same number of words per paragraph for every type of label.
- Break lines where natural phrases end, not by character counts.
- Use smaller chunks, arranged in different places on the page.
- Change spatial arrangements or size to suggest importance or relationships.
- Mix text and icons together in body copy, but be sure they are meaningful.
- Mix typefaces to create a variety of different messages within one label or to suggest different voices.
- Design "handwritten" labels, although be aware that visitors might find them temporary if they really are written by hand.

These techniques, easily achieved by the on-screen writer using a digital medium, create new possibilities for words on the wall. But most of this typographic experimentation is taking place among artists and advertising, not museum label text. Museum label texts, especially body copy, are not the place to be too avant-garde. My advice is, go ahead and play with wild titles and illustrations, but don't mess around with the body copy.

Museum labels are in a visual communication class by themselves. They are not text dominant like books or journals, but they use much more text than advertisements in print and electronic media. Compared to most other forms of environmental graphics (e.g., building titles, advertisements, directional signage), labels for outdoor museums such as living history sites, zoos,

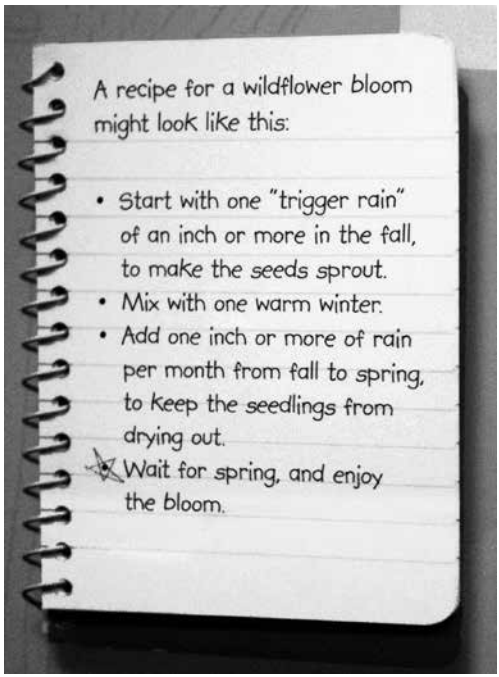


FIGURE 19.8
This "handwritten" label uses a very casual font to mimic the notes in a field guide. If it really had been written by hand, it would probably look too casual or temporary.

botanical gardens, and national parks use smaller type sizes, more text, and must last longer. More importantly a museum label's role in communication is more complex than the two-part sender-receiver model because there is a third element involved in museums: the object, or thing, or "stuff" the label is about. Labels are not independent entities.

The communication requirements of each label must prevail over the institutional aesthetic or personal style of the designer. This does not mean that the communication intent cannot include a personal look, voice, and point of view, but the experience the label writer is trying to enable for visitors is between the visitor and the object, not the visitor and the label. In my opinion, a label that gets remembered only for its clever style or progressive typography instead of the experience is just as much of a failure as the label that never gets read.

DIGITAL DEVICES IN THE GALLERY

Museums are increasingly relying on digital devices—computer screens, interactive tablets, smartphone apps—to deliver content. The rules for typography outlined in this chapter apply to these devices as well. There are

some precautions, such as whether visitors are allowed to change the size of an image by pinching and spreading what they see on the screen (see Jessica Brainard's case study in chapter 16.) The research is ongoing, but it does seem that technology does change the way we read. The way our brains interpret information from a flat, nondigital surface that light reflects off of is very different than from a light-emitting device.[10] Research has shown that it is more physically and mentally taxing to read from a screen than a piece of paper, but these studies usually consider lengths of writing much longer than your typical gallery text.[11]

While earlier screen resolution favored sans serif over serif fonts, because sans serif fonts are simpler in design, with fewer details, and are more legible at low resolutions, the resolution of today's screens is such that either type can be equally legible. The Lucida family of typefaces, designed by Charles Bigelow and Kris Holmes, was the first original typeface designed for both digital printers and screens.[12]

THE READABILITY OF BODY COPY

Readability has more to do with content than typography. It has to do with how difficult or complex the text is, or the ease with which a reader can comprehend the text. Readability is influenced by the reader's familiarity with the subject, by the writing style, by sentence length, and by vocabulary level.

Formulas for determining readability derive a figure according to a set of specifications, such as the number of words per sentence, or the average number of syllables per word. Word-processing programs such as Microsoft Word come with built-in applications (measurement and analysis) of these formulas, which convert into readability scores. For example, the Flesch Reading Ease test is based on both words and syllables, and scores range from 0 to 100—the higher the score the greater the number of people who can readily understand the text. The Flesch-Kincaid Grade Level test converts the analysis to a grade level and suggests that standard writing is between a sixth and eighth grade level.

None of the readability software is able to detect writing with annoying perkiness, pompousness, sappiness, unnecessary questions, or a casual attitude toward accuracy. These factors affect readability, and it takes a human editor to ferret them out.

Label writers working on computers without these tools can do simple mathematical calculations by counting the number of words and the number

of syllables per sentence in their texts. Good guidelines: Sentences should average from twelve to fifteen words, and there should be a range of 130 to 150 syllables per one hundred words.

According to readability tests, if you decrease the length of sentences and the number of multisyllabic words, you will make the text easier to read. The implication for label writers is clear: Review your copy, shorten long sentences, and use shorter words in place of longer ones whenever possible.

TYPE DESIGN

Between getting the words right and getting the label fabricated and installed, there is a big step called design. That step does not have a special chapter in this book because color, layout, sizing, form, balance, and other aesthetic design principles are not my area of expertise. I rely on people with those skills to help me all along the way, and so should you. Most of the designers I work

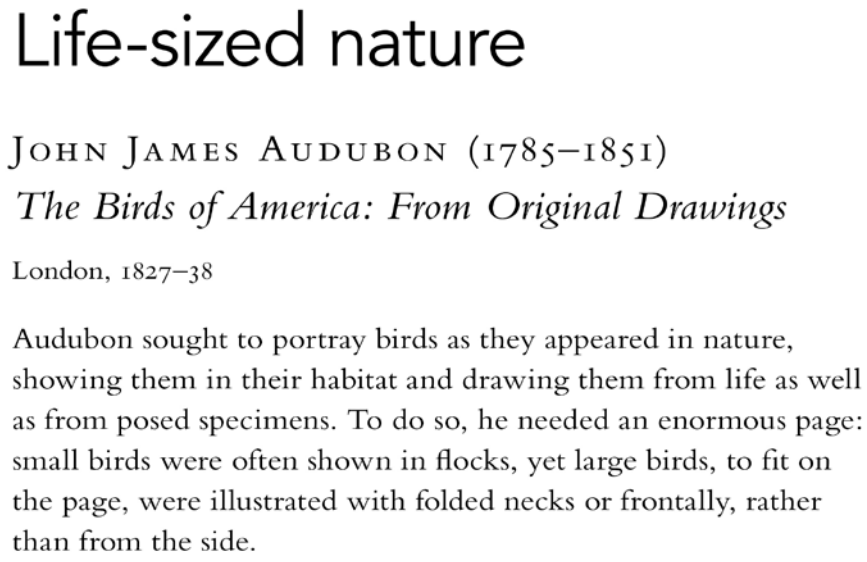


FIGURE19.9
An artful layout of different fonts and sizes, upper- and lowercase letters, and roman and italic type combines identification and interpretive text. Black type against a white background provides maximum contrast for legibility.

with will offer suggestions, listen to mine, and create labels that look and work better than I could conceive of on my own.

Museum exhibit designers and writers have the same goals—good communication—but each brings different sensibilities to bear on finding the best solutions to the problems. Working together will produce the best results. If the text is handed over to a designer and that person makes choices that detract from the meaning or message of the text, well, that's not good intentional design.[13]

The suggestions about typography in this chapter and those offered in earlier chapters about hierarchies of information, chunking text, using bullets, integrating illustrations, and evaluation will improve label design, but they do not actually tell you how to be a graphic designer. For that, my advice is to hire a good one.

MUSEUM TEXTS AND MEANING

Great typography can result in legible, readable text, and good writing can make texts easy to read. A big idea can keep the content focused, and when well matched with intriguing objects, art, and phenomena, the texts will be interesting. Through iterative testing the bugs that can prevent good communication will be worked out, and knowing what kinds of prior knowledge visitors are bringing with them will help exhibit developers figure out where to start the conversation. And there's more. There is systemic-functional linguistics, which looks at the social, contextual, interactive, and organizational ways that we use language in museums to create meaning with skilled forms of communication. Louise J. Ravelli's book, *Museum Texts: Communication Frameworks*, is a good next step for understanding the meanings that are constructed by the museum in its selection and design of spaces.[14] She discusses how labels themselves construct meaning; the settings make meaning, and visitors make meaning as they walk through these spaces with various degrees of conscious choices as afforded by the layout.

I hope and wish that museums will spend more time and as much money on research and evaluation about the fundamental and complex ways that we use text to communicate to visitors as they spend on marketing to reach visitors and to understand their motivations.

NOTES

1. The J. Paul Getty Museum. *Complete Guide to Adult Audience Interpretive Materials: Gallery Texts and Graphics* (Los Angeles: J. Paul Getty Trust, 2011), https://www.getty.edu/education/museum_educators/index.html; and Exploratorium, Design Guidelines: Text for Exhibit labels and Other Floor Signage (internal report for eventual inclusion in Design Principles handbook Exploratorium).

2. Fonts by Hoefler & Company, "Whitney," accessed August 26, 2014, http://www.typography.com/fonts/whitney/overview/.

3. Jimmy Stamp, "To Redesign a Design Museum Start with the Typeface," *Smithsonian Magazine*, August 14, 2014, http://www.smithsonianmag.com/arts-culture/redesign-design-museum-start-typeface-180952040/?no-ist.

4. Ann Neumann, "Liberty Science Center Graphic Standards" (unpublished document, Liberty Science Center, 2005). They are willing to share it.

5. Stephen Coles, "Kindle Paperwhite," *Fonts in Use*, September 7, 2012, http://fontsinuse.com/uses/2079/kindle-paperwhite.

6. Hermann Zapf, "Future Tendencies in Type Design: The Scientific Approach to Letterforms," *Visible Language* 19, no. 1 (Winter 1985).

7. Some of these questions were explored in research conducted at the Metropolitan Museum of Art, see Lisa F. Wolf and Jeffrey K. Smith, "What Makes Museum Labels Legible?" *Curator* 36, no. 2 (June 1993).

8. Email correspondence with Lisa Park, August 27, 2014. Whitney was developed for the Whitney Museum of American Art and is also used at the California Academy of Sciences. Verlag is used at the Guggenheim.

9. Email correspondence with Gordon Chun, May 28, 2014.

10. The research on how our brains react to digital devices is ongoing and as yet inconclusive. There are a number of interesting studies, articles, and books, including Maryanne Wolf's *Proust and the Squid*, and *Scientific American*'s "The Reading Brain in the Digital Age: The Science of Paper versus Screens," which cites a number of contemporaneous scientific studies, http://www.scientificamerican.com/article/reading-paper-screens/.

11. Ferris Jabr, "The Reading Brain in the Digital Age," *Scientific American* 309, no. 5.

12. Charles Bigelow, interview by Yue Wang, *TUGboat*, 34, no. 2 (2013). Accessed July 29, 2014, http://tug.org/TUGboat/tb34-2/tb107bigelow-wang.pdf.

13. G. Jennings, ed., "Intentionally Designed Spaces," *Exhibitionist* 33, no. 1 (Spring 2014).

14. Louise J. Ravelli, *Museum Texts: Communication Frameworks* (London and New York: Routledge, 2006).

20

Production and Fabrication

There are still ways to produce some low-technology labels cheaply in house, but the materials, methods, and prices of many other production processes are changing constantly.

The methods of making labels are changing so quickly. Equipment names and brands come and go; new materials and software programs are being developed as we speak. In-print resources, such as from the Society of Environmental Graphic Designers, the trade magazine *Exhibit Builder*, and the book *Signs, Trails, and Wayside Exhibits* (for materials and methods especially suited to out of doors) often contain out-of-date information. The National Association for Museum Exhibition's journal, *The Exhibitionist*, is a good source of information about recent changes in fabrication resources for museums. Even better are the online listservs where people can ask questions and discuss the latest and best resources, such as Museum Marketplace, Conservation DistList, and NAME listserv.

Most institutions rely on designers and fabricators, who tend to stay up to date with processes. Exhibit trade shows, like the one at the annual meeting of the American Alliance of Museums, are a good source of the latest production materials.

KEEP IT SIMPLE AND DIY

For many purposes, simple paper labels will suffice. Mock-ups, temporary exhibits, low traffic areas, or low budgets can get by with practical paper products. Smaller museums often use local outside graphic fabricators for banners, vinyl title signage, and large text panels. Then they design and produce smaller labels in house, using the same font and color palette the contracted designer used for the signage. These labels are printed on paper and mounted on mat board.[1] Various adhesive mounting products—spray-on glue, double-sided tape of different thickness—have their advantages, disadvantages, and consequences for removal. Test, experiment, and make choices based on each situation.

Today's desktop publishing software, or even simple word processing, gives label writers the opportunity and the tools to play the role of designer and fabricator as well. Some people may welcome this opportunity and, if they have the talent for it, can find good examples to follow in the sources mentioned above. If you feel confused, unprepared, and overwhelmed by the myriad of choices and possibilities, stick to some of the basic typographic guidelines in this book, and seek help from local sign shops or printers. The Internet has made cottage-industry designers easy to find.

The *Conservatory Cookbook* created by Huntington's Conservatory for Botanical Science in 2006 contained advice and directions for making a variety of exhibit labels in house, with the right equipment, that can survive in high levels of humidity, light, heat, and visitor traffic. It was updated in 2010 after more lessons were learned, as Rachel Vourlas reported: "The first cookbook had a construction diagram for a folded acrylic holder with flex-fold hinge—which gave us tons of trouble. The hinge cracked because people were rough with it, it got black mildew because we couldn't clean it properly. The current version has a diagram for a flip book made of iZone[2] pages hinged with a neoprene gasket material and sex bolts."[3] You never stop learning about materials.

Simple Printing

The simplest label production method is word-processed text, laser or ink jet printed on paper and glued to a heavier piece of paper to prevent the paper from curling. Bright white, thirty- to forty-pound coated coverstock or letter cover-weight paper or photo paper work well. Plain, unprotected paper is a



FIGURE 20.1
The Huntington's *Plant Lab* uses hanging banners and interpretive signs, and clipboards with laminated pages. Most are produced in house and replaced frequently due to the high humidity and heavy use.

good temporary solution, but sooner or later unprotected paper will be damaged by dirt and humidity. Inexpensive adhesive application machines—such as those manufactured by Xyron—allow institutions to easily adhere paper to a firm backing to create a finished label that can be put up on the wall.

Hang paper labels with one strip of adhesive at the top of the page (not four corners, not all the way around four sides) so that the paper doesn't buckle.

A cover of clear rigid plastic over the face of paper labels gives temporary protection from fingerprints and weathering. But a simple unlaminated sandwich of materials will age, creating a space for air, dirt, or moisture to collect and a good place for spiders and cockroaches to hide. Outdoors, plastic covers soon make great displays of condensation and algae.

Laminating graphics is more than making a sandwich. It involves actual adhesive bonding between surfaces. All types of laminations need to be done with equipment that can make the bonds clean, clear, strong, and without wrinkles or air bubbles. Professional equipment is often the best choice over hand-rubbed laminations. Eight- to ten-millimeter-thick clear laminate with



FIGURE 20.2
Six- to eight-page booklets with colorful laminated graphics and text offer extended interpretation. They are mounted on a clear Lexan stanchion.

a 1/8-inch sealed border makes a reasonably durable, inexpensive solution that will even work outdoors for a while.

For longer-lasting labels, permanent installations, and outdoor conditions, most institutions will benefit from establishing a relationship with local fabricators and reputable franchisers or dealers. Even Staples or AlphaGraphics can combine their skills with your needs at a reasonable price. Call other museums that have similar budgets, and compare notes on who and what to use. Ask for and check the references of companies you are not familiar with. The lowest bidder is not automatically the best choice. I know of more than one museum that has had a fabricator go out of business in the middle of a project since 2009.

Complex Printing and Lamination

Computer graphics software allows the user to compose text and images on the computer screen with programs such as the Adobe Creative Suite. These can be printed in house on an ink-jet printer or by production services with larger, more expensive high-resolution equipment. Before installation, these

are laminated with plastic sheeting front and back for support and protection. Brilliant colors shown on the computer screen may not be the same as what you will get from the ink-jet printer unless the monitor is calibrated to match, and lamination can further cause colors to change. Keeping designs simple (e.g., using three to five colors instead of ten) can help eliminate some problems. To avoid unpleasant surprises, get samples from each printer and keep them as references. Experimentation, practice, or buying in-house equipment can lead to better predictability for true colors. Also, when producing a set of labels for one exhibition, do all of them in one batch for consistency.

Care should be taken to work within standard size guidelines. Designers should be aware of the factory-determined sizes of paper, Plexiglas, plywood, and frames, so that they do not design custom graphics that are hard to fit, waste materials and money, or require oversized mounting options. The same four-foot-by-eight-foot sheet of material can yield four instead of two pieces, depending on a dimension change of only a few inches. Designers and production crews will get along better when both are willing to consider each other's needs and make compromises for the sake of economics and speed.

Flatbed or Direct Printing

Flatbed printing is an extremely versatile printing process that allows you to print high-resolution digital images directly onto a wide variety of surfaces, including plastic, paperboard, plywood, film, cloth, plastic, metal, even carpet and glass. The only requirement is that the surface be flat. The streamlined direct printing process is more environmentally friendly than screenprinting, since no plates or silkscreens need to be created (with their accompanying chemicals). The process, which uses software-generated graphics that require periodic updating, is commonly used for commercial purposes like retail and event signage, but museums are adopting it in creative ways.[4]

Duratrans and Backlit Film

Labels made of color or black-and-white film inside dimensional frames with internal lighting used to be good choices when front lighting was not appropriate. Aquariums used backlit labels with photos and texts extensively in galleries where the fish tanks are brightly lit and the surrounding areas are dark. Backlit film needs to be used with a diffuser or the light will "burn" in one spot instead of being evenly distributed across the sign.

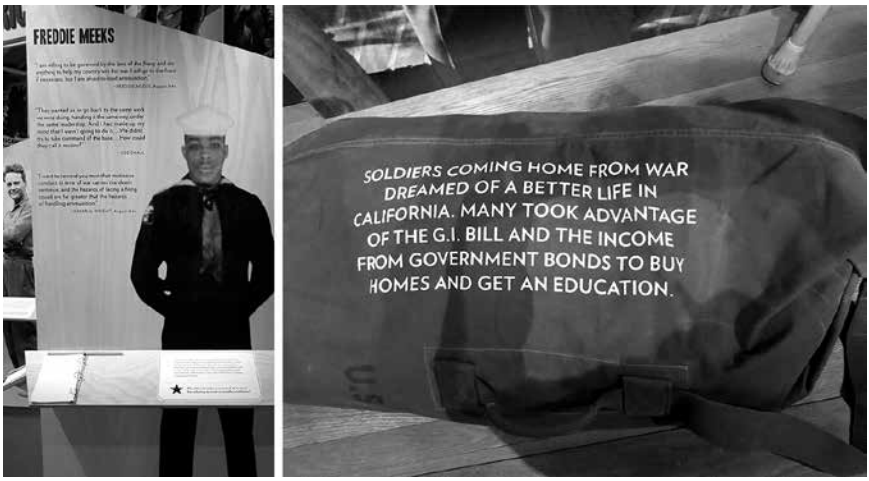


FIGURE 20.3
The label on the vertical wood panel for sailor Freddie Meeks and the text on the duffel bag were made by printing directly onto the substrates using a digital technique called flatbed printing.

More modern production for backlighted signs involves a single sheet of translucent material with graphics printed directly on it and lighted with LEDs. The renovated labels for the dioramas in the dark halls of the American Museum of Natural History have individual rheostat control so the brightness of each sign can be adjusted to its own situation.

Digital Screens

At the time of this writing, small and large digital screens were rapidly making their way into museum galleries. Their high initial cost can be offset by the ease of making changes to label text and layout. Small interactive digital screens, such as iPads, allow visitors to engage with content in a variety of ways, from deeper exploration of content, to playing exhibition- or collection-related games, to contributing visitor-generated content. Sometimes there are issues with locking the screens to one particular use or getting the iPad to ignore alert messages coming to it, such as updates. Issues also include security of the device to avoid theft or tampering, a reliable power source, cleaning the screens, and in some cases, depending on the use, access to dependable Wifi.



FIGURE 20.4
Theatrical spotlights shining through custom metal stencils create these words on the floor: "I would love to wear." This technique at the Chicago History Museum is good for low-light and light-traffic areas.

Formative evaluation is key in designing apps that visitors will find attractive and easy to use and that will provide meaningful experiences beyond the novelty of a screen to play with. Key also to the success and evolution of iPads and other digital interactives is when museums share their lessons learned.[5]

Cut Vinyl

Computerized vinyl-cutting machines are popular for making durable indoor or outdoor signs. Vinyl comes in a wide array of colors, has a strong adhesive bond, and can be put onto a variety of smooth surfaces. Cut vinyl comes as prespaced letters, words, and sentences. By selecting typefaces that do not have fine serifs, the job of peeling letters off the carrier sheet will be

easier if they do not come prepeeled. Usually the letters are already on a transfer sheet, ready to be applied.

Simple graphics, such as silhouettes, geometric shapes, or a collage effect, can also be made in digital cut vinyl. Skillfully combined text and illustrations can make colorful, relatively inexpensive, and attractive labels for museums.

There are, however, several inappropriate applications of vinyl letters having to do with size and location:

- The machines can cut letters in sizes down to about 1/4 inch tall, but body copy at that size does not look good in boldface. Running text in small sizes is also very difficult to lift off the carrier sheets. Some sign makers have devised ingenious ways of "weeding" (removing the tiny insides of letters like *e* or *a*), but for the inexperienced person it can be a messy, tedious headache, and the results are not often worth it. Use cut vinyl for what it does best: making headlines in large type with few words.
- Avoid applying vinyl letters on surfaces where visitors can reach them easily. As soon as one little corner of the vinyl gets lifted away, people are invariably attracted, almost unconsciously, to peel them away more. Missing letters make reading difficult, not to mention making the sign look miserable. Use vinyl letters on surfaces far from people's hands.

The Exhibitionist has a good article about using vinyl type called "A Beginner's Guide to Vinyl Lettering Systems."[6] You can often pick up other production tips there and at NAME's occasional regional workshops.

Silkscreening

Newer flatbed printing materials might prove to be long-lasting for outdoor use and be more cost-effective than silkscreening. Thus, the information below may be out of date, but it is included here because some of the issues are the same.

For outdoor labels, silkscreening provides color and durability. Two-part acrylic polyurethane paints are extremely weatherproof and resistant to fading, and they need to bond with the substrate to avoid flaking or being picked off. The surface of a silkscreened sign can be treated with a matte finish to reduce glare and provide a graffiti-resistant covering that can be cleaned.

To reduce the amount of set-up time and to help keep costs low, one-of-a-kind labels can be designed in similar sizes so that the screener can "gang" them during production. Borders, background colors, headline rules (underlining), or logos used repeatedly can be printed from one screen, with customized text and illustrations added from others set up as one-of-a-kind. Limiting the number of different sizes, using fewer colors, having no overlapping colors, and turning all of the artwork in at one time or in batches of like pieces can help reduce expensive labor costs for silkscreening.

Certain types of base or substrate materials for silkscreened labels can be repaired if they get damaged or an error is noticed. Screens, artwork, and all documentation about color specifications should be kept for reference when making repairs. It is much less expensive when you do not have to start over from scratch.

Silkscreening or direct printing on clear Plexiglas is simple, but very problematic:

- If text is screened on the face of the plastic, the letters will cast shadows on the wall behind them.
- When type is screened on the reverse surface of clear Plexiglas to protect the letters, you may still get annoying shadows and decreased legibility if the labels are not mounted absolutely flush with the wall surface.
- When text on clear plexi labels is placed in cases or on top of graphics, what is visible behind them can and will cause distraction and decrease legibility.
- "Floating" text by printing directly onto the transparent surface of an exhibit case can be attractive, but only when the background color in or beyond the case contrasts sufficiently with the color of the type.
- Plexiglas labels, front or reverse-screened, have highly reflective surfaces. Glare decreases legibility and is annoying and tiring.

Shadows behind letters are one of the most common offenses in exhibit design even by the most experienced and expensive design services. Beware!

Only when type is screened on the reverse and then backpainted—usually to match the color of the wall—is clear plexi recommended as a substrate. Textured nonglare Lexan or acrylic is a much better choice.

Labels silkscreened on Formica surfaces often get rubbed off because of the inability of certain kinds of paint or inks to adhere permanently. Mechanical and chemical adhesions need to be strong enough to resist normal wear and tear. Check this requirement with your fabricator ahead of time, and specify it explicitly in your bid documents before production begins. Putting a plexi sheet on top of the label is not the most attractive, best, or only solution.

I like labels to be touchable. When labels are on reading rails outside cases, visitors can interact with them more directly. I am always happy to see visitors running their hands along text as they read, or pointing and touching parts of a label as they call a friend over to see what they have read. The slight surface texture of painted, front-screened labels adds warmth and friendliness, unlike clear, flat, cold, reflective surfaces or the uniform surfaces of subsurface printing on Lexan. Rubbed-off letters indicate that visitors have been using them. Why not replace them with materials that can withstand and invite their use?

Labels on accessible reading rails outside of cases, vitrines, or dioramas have an added benefit of letting exhibit teams test texts as mock-ups before final installation because the labels are not out of reach inside cases.

Silkscreening labels directly on the wall, in larger letters, above paintings in an art exhibition makes the text easier to see while standing back from the pictures. This solution eliminates the "shuffle dance" that visitors typically do in art museums—two steps up and squint at the tiny label on the wall, three steps back to view the painting, five steps to the left, and repeat.

Labels That Will Last Outdoors

Because of their one-of-a-kind, text-heavy, small-typography requirements, the production of outdoor museum interpretive labels poses exceptional challenges, compared to that of directional signs, logos, or name-only ID placards.

For outdoor labels there are three desirable characteristics: colorful, durable, and inexpensive. Pick any two.

It is important to match the type of process used to the life expectancy of the label. If the label is going to be up for a long time, it may be worth investing in something durable. This also has implications for sustainable design. Sometimes the more "green" choice is not as durable, but the less green choice ends up being better for the environment because it isn't going to be replaced.

Colorful, durable signs that are silkscreened, fiberglass-embedded, or made of porcelain enamel are not cheap. Durable, less expensive, photographically processed metal products, typically used for botanic garden plant name labels, lack color choices. Colorful, inexpensive paper products (such as color photocopying) will not last long outside. Even when laminated, they will need to be replaced often due to fading or humidity. But frequent replacement might not be objectionable, especially if updating information is necessary or desirable.

Fiberglass Embedment

Embedding silkscreened or digitally printed labels in clear fiberglass makes a very durable, lightweight outdoor sign that can include color photographs. The National Park Service has used this technique extensively, but as of this writing, there's been a lot of fading.

Fiberglass can also be fractured or gouged. Replacement costs can be lower if multiple copies are screened at one time and stored for later use, but that raises initial costs.

High-Pressure Laminate (HPL) Panels

To create these panels, digitally printed paper is impregnated with a thin layer of melamine resin, a special ultraviolet-light-resistant overlaminate, and attached to a phenolic resin-impregnated substrate through intense pressure and heat. The process fuses the layers together into a very durable panel. HPL panels allow bright vibrant graphics, excellent UV protection, are graffiti and scratch resistant, and do not rust. Producers give them a twenty-year warranty.[7] And they are "bullet-proof"; that is, bullets will pass right through the sign with very little other damage.

Porcelain Enamel

Advances in enameling techniques provide excellent quality and durability for text and four-color-process photographs, but initial costs may be very high, depending on the manufacturer and number of signs produced at one time. Porcelain enamel is weather and UV resistant, and it is a good choice for outdoor labels. But because it is a form of glass, it can be shattered by intentional or accidental impact (i.e., not bulletproof). Porcelain enamel signs also require a separate substrate to mount them. High prices may be the reason that manufacturers are hard to find these days.

Polyvinylchloride (PVC)

I worked with the same exhibits fabrication company in the Chicago area, Proto Productions, for more than a decade to produce graphics for indoor and outdoor installations. We tried a variety of materials and found advantages and disadvantages to them all. Our favorite was the clean-looking, almost bulletproof PVC (polyvinylchloride) panel with colorful, fade-resistant acrylic polyurethane paints and screen inks that form chemically bonded adhesions. Clear finishes protected the face from graffiti, and the panels did not require special framing or covers and could be fabricated in any shape. Today, Ken Hopkins, president of Proto Productions, has switched to direct or flatbed digital printing almost entirely, but keeping up with the technology, he says, is a daily practice.

Etched Metal and Engraved Plastic

Photosensitive metal plates are commonly used by botanic gardens for small plant labels. Larger plates can be used for interpretive labels that last well out of doors and are relatively inexpensive to produce. Most common are black with silver or gold letters. They last a long time, even in harsh environments. Newer production methods use lasers and can produce labels with more colors.

Engraved plastic labels are also common in botanic gardens, and they have the same advantages and disadvantages as photometal. They are relatively inexpensive and durable, but they come in limited colors and have limited capacity to show illustrations.

Direct digital printing will probably become an economical and more versatile alternative to both of these methods.

Cast Metal

Historical markers have typically been made out of heavy, long-lasting metal with cast letters and sparse graphics. This product offers a limited range of choices for typefaces and type sizes, and its high cost makes it less suitable for an exhibition consisting of many different interpretive signs. Harsh outdoor environments might make bronze or aluminum the material of choice.

Donor plaques are often made of cast metal, probably because this material conveys a permanent, historically significant reverence.



FIGURE 20.5
A new indoor sign was fabricated in an old style and material to match the mood of a historical wayside exhibit.

Theft might be a problem with certain materials that are valuable when melted down and reused.

No Such Thing as Vandal Proof

Nothing has been invented yet that is vandal proof, but some materials are more resistant to intentional damage than others. Polycarbonate covers over signs may keep vandals from marring the original surface, but scratched or graffiti-covered covers look just as bad.[8]

Sustainable Exhibit Materials

Sustainable or "green" design is commonly defined as something that meets the needs of the present without compromising the ability of future generations to meet their needs. The basic principles include minimizing resource consumption and reducing pollution. This is a constantly shifting arena, with new products, procedures, and philosophies emerging at a rapid pace.

There are many ways to incorporate a sustainable approach to label design. You can start small, using paints that are less toxic and products that



FIGURE 20.6
Regardless of the materials or expense to build them, your signs might be used in ways you never intended. Make them colorful, legible, beautiful—and strong.

are recycled and can be reused or recycled. Among companies that manufacture paint, plastics, and adhesives—under the watch of the Environmental Protection Agency (EPA) and the Occupational Safety and Health Agency (OSHA)—there is a continual striving to produce safe, economical, long-lasting materials. You can also look more broadly at the impact various materials have on the environment, and think about the "cradle-to-grave" effect of a material choice. There are many resources, including those cited here, and it is worth taking the time to generate an institutional approach.[9]

The Spring 2009 issue of *The Exhibitionist* was titled "Green and Lean" and includes a number of articles about how different museums deal with the topic of sustainability.

Don't Forget to Evaluate

After production, fabrication, and installation have been accomplished, it is time to step back and evaluate. Too often, time and money have already

been used up, and the exhibition team has collapsed from exhaustion. The last thing they want to know is if something is not right. A better approach is to do plenty of cheap paper full-sized mock-ups of the labels you plan to contract for expensive production before the design phase is finished.

Think of evaluation as yet another good opportunity to improve the exhibition's communication ability and then to bask in the praise of satisfied visitors and admiring peers. To learn more about ways to find out if your visitors and peers are admiring your efforts, see the next chapter about summative evaluation.

NOTES

1. Personal communication with Katherine Whitney per January 29, 2014, email with Margie Maynard, Sonoma Valley Museum of Art.

2. iZone is a brand of high pressure laminate, done by an out-of-house fabricator.

3. Personal communication from Rachel Vourlas, and the cookbook can be downloaded from http://www.huntington.org/uploadedfiles/files/pdfs/conservatorycookbook.pdf.

4. Thomas Franklin, "The World is Flat: Flatbeds Take on Printing," *Digital Output*, XIV, no. 7 (July 2008).

5. Museums and the Web conferences post many of their talks and articles online.

6. Ed Mastro, "A Beginner's Guide to Vinyl Lettering Systems," *Exhibitionist* 14, no. 1 (Spring 1995): 48–51.

7. See iZone, for example: http://www.izoneimaging.com.

8. The appendix of a 2010 study about trends in zoo and aquarium exhibit interpretation has a helpful annotated spreadsheet of various signage materials: "Trends in Zoo and Aquarium Exhibit Interpretation" (report, Oregon Coast Aquarium, January 2010), http://www.izea.net/education/Trends%20in%20Zoo%20and%20Aquarium%20Exhibit%20Interpretation.pdf.

9. The following are references for sustainable exhibit practices: Greenexhibits.org, http://www.greenexhibits.org/begin/defining_green.php; Karl Abeyasekera and Geoff Matthews, *Sustainable Exhibit Design: Guidelines for Designers of Small Scale Interactive and Traveling Exhibits* (Lincoln, UK: University of Lincoln, 2006); Jonathan Jager, "Environmental Correctness (EC) for Designers," *Exhibitionist* 14, no. 2 (Fall 1995).

21

Evaluation after Opening

Summative evaluation of exhibitions tells you what actually did work as expected, what unexpected but appropriate outcomes are occurring, what did not work, and (maybe) what to do about it.

No matter how hard you try or how experienced you are, or how much prototyping was done for individual exhibit elements, there is no way to know how the whole exhibition will look and work until you have the whole thing up and running. It will not take a professional evaluator to tell you what the exhibition's major strengths and weakness are, since many of them will be obvious. But to find out how well it is working, in more introspective detail, requires some form of analysis.

Summative evaluation of labels is done within the context of the whole exhibition, and, therefore, does not have a special strategy separate from summative evaluation in general. For this reason, this chapter will range seemingly far from the specifics of labels into the larger questions raised by evaluation after an exhibition has opened, including a discussion of evaluation methods, highlights of some collaborative projects, and sharing data and findings.

SUMMATIVE EVALUATION FOR REMEDIATION PURPOSES

Evaluations after opening will reveal mistaken assumptions or expectations by the exhibit team and weaknesses or omissions that can often be fixed with relative ease. This is called *remedial evaluation*.

Minor changes in label copy can sometimes make a dramatic difference, providing that the labels were produced in a modular or correctable format (e.g., computer-printed, laminated, or dry-mounted paper labels). Labels printed directly on the walls or inside cases are more difficult to fix—a good argument for making and placing labels in more repairable formats. Computer-generated labels allowed the California Museum of Science and Industry to make minor changes to more than 50 percent of the texts and graphics in their *Molecules in Motion* exhibit, improving directions for interactives and interpretations of the chemistry for younger visitors who were clearly attracted to the exhibition and spent lots of time interacting with it but were not grasping some of the intended messages.

Problems with orientation and traffic flow or circulation can be rectified by the addition of banners, introductory labels, arrows, maps and floor plans, baffles, lighting, or directional signage. New illustrations or photographs can be added to supplement texts, and labels can be repositioned to make conceptual relationships stronger. Over the years of remodeling the animal exhibitions at the Field Museum in Chicago, the clarity of floor plans and interactive instruction labels improved as exhibit developers responded to the results of summative evaluations of their phased projects.

Leaving money in the budget to evaluate and fix what needs fixing after the exhibit is open is a very good idea because it carries the iterative process of exhibit development to its logical and complete conclusion. Although you can never fix everything that needs it, whatever is made better will benefit everyone. Fixable things should be fixed sooner, not later, because with every day that passes there are more visitors being confused or disappointed and exhibits being ignored that otherwise could be successful. Even fixes that look temporary are better than none because they say to visitors, "We care about making this work better for you."

More museums these days are including 10 to 15 percent of the exhibition's budget for remedial evaluation. Setting the budget aside at the beginning of the process acknowledges that the exhibit planners expect to discover important new information about the design and presentation of the exhibition after it all comes together. Some of the best solutions to exhibit problems will not be apparent until after opening. It is money well spent.

THE POSSIBILITIES OF SUMMATIVE EVALUATION

Besides finding out what didn't work or needs improvement, there is also the delight of finding out what did work.

There are several things that you can do with summative evaluation that are not possible with front-end, formative, or remedial evaluation:

- Use a multiple-method approach to look at the same exhibition from several different aspects.
- Probe for evidence of meaning making with sensitive, thorough, and authentic measurement tools and strategies.
- Make comparisons between audiences in the same exhibition during different seasons or at different sites.
- Do collaborative studies that compare exhibitions to create new hypotheses about visitor behavior and museum learning, or to confirm existing assumptions.

Each of these opportunities is discussed below. The direct connections between what follows and label writing may not always be obvious, but keep in mind that interpretive labels contribute greatly to the overall impact and effectiveness of exhibitions.

Multiple-Method Approaches

Summative studies are a good time to use more than one technique to find out how well the exhibition is working. Using several strategies to look at the same exhibition will enable stakeholders (e.g., exhibit developers, funders, administrators) to gain a more thorough perspective about how the exhibit is being used and what visitors are taking away with them.

Many evaluators use exit surveys or interviews to provide feedback about what visitors found memorable, enjoyable, and meaningful. In addition, unobtrusive observations of visitors as they use exhibitions can answer other questions that cannot be self-reported as fully or accurately. For example, few visitors would be able to recall the names of all the exhibit elements they stopped at in an exhibition or which labels they read, but they may be taking away some tacit knowledge, even based on a brief exposure. By observing the number of visitors who stop at each exhibit element and engage in certain learning-related behaviors (e.g., reading labels, talking, pointing), practitio-

ners can get information critical for constructing a picture of total exhibit use by visitors. Data from questionnaires or interviews about what visitors think and say can be analyzed along with observational data about what visitors did. Over the years of watching and listening to visitors, I've concluded that when visitors self-report upon leaving an exhibition that they read "most of the labels" they are probably saying that they read as many as they wanted to. When visitors tell the exit interviewer that they "wanted more information," they are probably saying they wanted more information that was personally meaningful to them.

Harris Shettel did one of the first big, comprehensive, multimethod summative evaluations on *Man in His Environment* at the Field Museum. Drawing on his experience in social science and psychology, he used questionnaires, oral interviews, and observations to gather feedback from visitors.[1] Pre- and post-test groups of visitors were queried for their knowledge, attitudes, and "personal commitment to change," and results were compared and correlated with demographic information, such as age, sex, education, and residence. Based on Shettel's three-factor model of exhibit effectiveness (attracting power, holding power, teaching power), the study was exemplary in its thoroughness—detailed, quantitative and qualitative, and statistically valid.[2]

For the 1990s traveling exhibition *Darkened Waters: Profile of an Oil Spill*, a combination of data was gathered from visitor comment cards, unobtrusive tracking and timing, structured exit interviews, open-ended interviews at specific exhibit elements, and questionnaires filled out by cued visitors.[3] In addition to the visitor feedback from the variety of methods listed above, peer review and critical appraisals were obtained at the exhibit's original venue and from subsequent reviews as it traveled. While the study covered factors similar to those given in Shettel's model, the sample sizes were smaller, the research questions were broader, and the data were not subgrouped for comparisons (e.g., between age or gender group types) or subjected to detailed statistical analysis.

Evaluations showed that people responded to *Darkened Waters* positively and appropriately:

- Visitors moved through the exhibit slowly and thoroughly.
- They read many of the labels, and they used the interactive devices repeatedly (e.g., a U.S. map with a movable overlay of the spill; the "petroleum

game" flip labels and oil products; audiotapes of Native Americans talking about the impact of the spill on them, an otter pelt to touch).
- On exiting the exhibition, visitors could remember general ideas (the main communication goals) from the exhibition, and they reported learning specific new concepts, making new connections, and finding personally relevant meanings in specific elements of the exhibit.

Drawing on but altering Shettel's model, the *Darkened Waters* evaluation was my inspiration to devise ways to gather data through observations and questionnaires with simplified, standardized, museum-practitioner-friendly methods and to compare data across a wide range of exhibit types. This will be discussed more in the upcoming section on collaboration.

New Measurement Tools

Museums are moving away from traditional education models of summative evaluation that use questioning techniques with yes-no, right-wrong, fact-based, multiple-choice, or closed-ended questions. The informal nature of museum learning calls for new measures that challenge evaluators and educators to define learning broadly and to ask visitors more holistic, contextual, and open-ended questions. Rating scales and binomial adjectives get visitor feedback about likes and dislikes and other affective and motivational indicators, but these formats often do not provide descriptive information about *learning*. We need better ways to tell what visitors understood and found memorable and meaningful.

Listening to Visitor Conversations

We want to know how visitors rearrange information to fit into their preexisting knowledge and what kinds of emotional associations they make with the exhibits. One method is to record visitors' conversations in exhibitions.[4] Research studies have shown that verbatim label text, paraphrasing, and values (such as historical and financial importance) are incorporated into visitors' language and ideas as they use exhibits.[5] Another strategy is through extended open-ended visitor interviews during and after looking at the exhibits. But content analysis of hours of visitor conversations can be a cumbersome and expensive way to hear what visitors have to say. Listening to visitors as they use prototypes and while evaluators are unobtrusively observing them dur-

ing tracking and timing is quicker, less expensive, and it gathers important insights, although it is certainly less thorough.

Open-Ended, Cued Questionnaire

Another way to capture rich, verbal indicators of meaning making in more practical yet still personal terms is through using an open-ended questionnaire described in "Capturing Affective Learning."[6] It asks visitors to briefly tell in their own words what they think the purpose of the exhibition is, to write about something they didn't know or never realized before and what they were reminded of by the exhibition.

Content of visitors' written feedback can be analyzed qualitatively or in quantitative goal-referenced ways. By tallying the percentage of the comments that are specifically related to the communication objectives and the big idea and by assigning a rank (e.g., high, medium, low) to each person's sheet overall, the degree to which visitors "got" the communication objectives can be assessed. This open-ended questionnaire captures memorable "exhibit echoes"—instances in which visitors remember what they read, did, found out, or saw and report it so clearly that you can tell where in the exhibit they probably had the encounter.

Visitors' Photography as Evidence of Meaningful Experiences

It is helpful for exhibit developers to understand the *ways* visitors have for connecting personally with exhibit elements and interpretation. Two recent summative evaluations have used photographs taken by visitors in the gallery, which has helped clarify how visitors engage in meaning making. Visitors talked about their photos, and their discussions revealed that they made connections in three main ways: though the sensory properties of the exhibit environment, through the recall of similar activities and ideas they have from prior experience, and through new perspectives gained from the content and context of the exhibits.[7] Exhibit makers and label writers have the ability to intentionally influence all of these ways of connecting.

Seasonal and Multisite Audience Comparisons

One of the questions that comes up regarding summative evaluation is, "Will the audience sampled at one time of the year be representative of other times as well?" This question has implications for both marketing and the evaluation

of effectiveness. Evaluators and stakeholders want to know if the results are the same regardless of the time of year or where the exhibition is on display.

At the Old South Meeting House in Boston, a summative evaluation included two separate studies at different times of the year (summer and fall) to see if visitors during those two seasons had different demographic characteristics and if they used the exhibition differently.[8] The study showed that they indeed were demographically different: The summer audience was made up of more out-of-town visitors, a higher proportion of family visitors, and more young visitors. In exit interviews, the older fall audience made more references to "time," "history," and "long ago" than the summer visitors. The differences between the two seasonal audiences, however, did not seem to have an impact on what they did in the exhibition—where they went, whether they used audio and low-tech interactive devices, and how many labels they read. They used the exhibits in almost exactly the same ways. The amount of time spent by summer and fall visitors was the same. The most popular and least popular exhibits were the same. This unexpected uniformity of visitor behavior suggested that the museum's assumption that the fall audience consists of more "serious visitors" may be misguided.

In a multisite summative evaluation of the American Museum of Natural History's traveling exhibition *Global Warming*, the same measurement techniques were used with different audiences as they viewed the exhibit in its six locations. The study looked at the impact of variations in the way the exhibition was installed (e.g., different layout of elements), the type of museum (e.g., natural history, science center), and the demographics of the cities from which visitors came (e.g., average education level). The *Global Warming* interview data indicated that visitors from all venues responded rather consistently. Tracking data showed that the same exhibit elements were most popular in all traveling sites. In comparing the data from types of museums, however, there were significant differences in the amount of time that visitors spent. Visits to the same exhibition were considerably shorter in science centers compared to natural history museums.[9] In other studies, Randi Korn has noted this same difference,[10] and when the Science Museum of Minnesota compared their visitors' use of the exhibition *Water* to how the visitors at the AMNH used it, they saw the same trend—science museum visitors spent less time.[11] Knowing more about how exhibits work in diverse situations can help us develop better traveling exhibitions.

Collaborative Studies

Besides the *Global Warming* study mentioned above, only a few research studies have looked at visitors in different museums, asked the same kinds of questions, and used the same research methods and strategies so that the results could be compared. In the past, no set of standards for judging the excellence of exhibits has been accepted or widely used. Even the suggestion that exhibit standards be set is annoying to many museum practitioners. But without some form of guidelines, goals, or even a basic understanding of what is normative, we are adrift, with little means of measuring our progress or direction. Not-for-profit organizations such as museums are accountable for leadership, mission fulfillment, and high standards of quality. Large-scale collaborative research and evaluation projects and shared criteria for success can help us move closer toward the goal of making better educational exhibitions.

The nine projects discussed below have asked broad questions about visitors, museums, exhibitions, and evaluation. Looking within those issues, we often find important implications for interpretive labels. Some of these projects took place years ago, but just because they are old doesn't mean they're not still useful. Some are new, and there will continue to be more in the future, especially through the activities and programs of the Center for Advancement of Informal Science Education (CAISE).[12]

1. Building Informal Science Education (BISE) Research Synthesis

The BISE project created a searchable NVivo database out of the website informalscience.org, a large, growing, and open collection of evaluation reports that focus on informal learning. The collaboration was voluntary on the part of the authors of posted reports, and the database construction was a collaboration between the Science Museum of Minnesota and the University of Pittsburgh Center for Out-of-School Learning. Their goal was to look at what the informal science field might learn about impacts, approaches, and findings through its evaluation of informal science education projects.

I was one of a group of five evaluators and researchers invited to use the database to synthesize information in answer to a question of their own choosing and to write a paper that would be relevant to the field of visitor studies. My question was, "What can we learn from recommendations made in exhibition summative evaluation reports?" Other authors synthesized information about media, socially relevant practices, and websites.

Of five-hundred-plus reports posted, there were ninety-six summative evaluation reports for museum exhibitions. Forty-six of them were coded for the word *recommendations*. My report looked at each one to see what kinds of advice the evaluator had proposed.[13] Common issues that emerged were recommendations for improving orientation and conceptual communication and to define exhibit boundaries. Recommendations also stressed the need for prototyping and for ways to increase the utilization of exhibit elements.

It is my opinion that all of the issues listed above are grounded in, relate to, are caused by, and contain missed opportunities for the "apprehendability" of exhibit labels in the designed environment.[14] That is, the words are there (e.g., labels for wayfinding, introductions, titles, interpretation, instructions), but too often visitors can't, don't, won't, didn't see them, or didn't understand them, and, thus, were not able to use (or apprehend) them in meaningful ways. This is a more subtle problem than the font size or color of the type. The degree to which the words help visitors find personal meanings—see themselves, be reminded of prior knowledge and experiences, connect emotionally, and feel competent—is to a large extent under the direction of exhibit makers. The big challenges—orientation, boundaries, utilization, communication—for exhibitions are intricately and inextricably linked to the apprehendability of texts.

2. The Getty Insights Project

The Getty Insights Project used the research technique of focus groups in a large, well-funded, collaborative project conducted for the Getty Center for Education in the Arts and the J. Paul Getty Museum in 1987 to 1990. Eleven large American art museums conducted focus groups with staff, visitors, and nonvisitors (people who had not visited the museum before). Sessions were videotaped, and museum staff observed the group from behind a one-way mirror as visitors and nonvisitors discussed their expectations and impressions before and after visiting the museum. It was the first time some staff had the opportunity to listen carefully to what people thought about the exhibitions, labels, visitor services, and other aspects of the museum.

The findings had remarkable consistency across all eleven participating museums. Getty focus group participants said that their contact with art in museums created emotional, exhilarating, habit-forming experiences. The

museum experience was meaningful and rewarding for first-time visitors and repeat visitors. Both groups wanted information about the art, especially in contemporary collections and art from non-Western cultures.

The Getty project contained implications for labeling in many aspects of the report, including these findings:

- Orientation, layout, and organization were a problem at all eleven museums.
- Intimidation and inaccessible information were concerns of nonvisitors.
- Visitors wanted "those little signs on the wall" to be larger, more informative, legible, and written in language people can understand.

It was an eye-opening experience for art museum staff to hear intelligent, caring, well-intentioned museumgoers say things like, "Many times [labels] would use terms that if you were really into history or really into art you would probably recognize, but which I didn't know. They would use the term and not explain it enough. It would leave me hanging." Many staff had their prior assumptions about visitors challenged and revised in ways that made them more sympathetic to visitors' concerns.

A final report, *Insights: Museums, Visitors, Attitudes, Expectations*, summarized the findings, individual museum projects and the presentations, and the discussions of a colloquium for all participants and invited speakers. The report is out of print and hard to find but certainly worth the trouble, and it is highly recommended reading for practitioners of all types of museums.[15]

3. Paying Attention: Visitors and Museum Exhibitions

In the search for generalizable and transferable data, I started an informal, unfunded research project that grew out of the 1992 summative evaluation of *Darkened Waters* (discussed earlier in this chapter) to address the issue of the comparability of summative evaluation data.

Darkened Waters was called a successful exhibition, but what did that success really mean, and would it be possible to compare "goodness" across exhibitions in some fair way? My first attempt was "The 51% Solution," which used a methodology that combines a systematic, summative evaluation strategy with criteria for assessing and comparing the effectiveness of a broad range of educational exhibitions based on their ability to attract and hold visitors' attention and communicate their messages.[16]

The data we compared were from unobtrusive tracking-and-timing studies, a well-known method for looking at visitors as they interact with the various elements that make up the total exhibition experience. Visitor tracking-and-timing studies measure the relative thoroughness with which visitors use exhibitions. Time spent—allocation (where) and duration (how much)—in an exhibition is evidence and a prerequisite for learning to take place. This study looked for answers to questions about normative trends and exceptional data on visitor time and use of all types of exhibitions. The data for an exhibition's ability to communicate its message turned out to be much less amenable to comparisons across museums, so we stuck with the more objective measures of time and stops.

Started with the help of 24 museum practitioners at the 1993 Visitor Studies Association conference, the database grew to include 110 exhibitors, with the help of a small grant for exploratory research from the National Science Foundation from 1997 to 1998. The American Association of Museums published a summary report of the findings in 1998 titled *Paying Attention: Visitors and Museum Exhibitions*.[17] Fifty more studies were added to the database in 2010, and the conclusions were published online.[18] The *Paying Attention* study generated two new measures that can serve as comparative data points: the sweep rate index and the percentage of diligent visitors.

As of 2014, this was one of few aggregations of data from standardized methods across museum types and over time. Although far from a perfect methodology and critiqued by many, it is still a useful tool for analyzing fieldwide data, identifying the most "thoroughly used exhibitions," and, probably most important, for setting realistic norms, parameters, and goals for in-house use.

4. Open Conversations

Initiated in 1982 at the Field Museum and supported by the W. K. Kellogg Foundation, a project called "Museums: Agents for Public Education" took place over a six-year period. Five hundred museum professionals from more than three hundred institutions attended workshops held in Chicago for educators and exhibit development teams. Although this was not specifically a *research* collaborative, it was definitely a collaboration, and it had many implications for exhibitions, interpretation, and evaluation. The final publication is a synthesis of the interactions, explorations, and discoveries shared

by the participants. Called *Open Conversations: Strategies for Professional Development in Museums*, the report also contains activities that museum practitioners can conduct for themselves in their own institutions.[19]

5. In Principle, In Practice

The 2007 publication *In Principle, In Practice*, also a result of a conference of museum professionals, contains a brilliant chapter called "Research in Museums: Coping with Complexity," which describes and compares methods used in summative evaluations. The authors discuss the strengths and limitations of qualitative and quantitative analysis in ways that are not adversarial or diametrically opposed, as so often we hear it, but in ways that make you want to use both when one or the other situation calls for it. The collaborative process that produced that chapter must have been a long and thoughtful one. *In Principle, In Practice* promotes effective programs and exhibitions, identifies promising approaches for future research, and suggests strategies for implementing and sustaining connections between research and practice in the museum community.[20]

6. People, Places, and Pursuits

Another useful book, developed by the Committee on Learning Science in Informal Settings, contains a chapter on "Science Learning in Designed Settings."[21] Don't let the "science" part scare away history or art museum practitioners, because this volume contains helpful ways of thinking broadly about realistic impacts and expectations for practitioners. They don't talk about labels specifically, but they do lay out the environmental and learner considerations for successful projects. What is described in the "designed settings" chapter resonates strongly with the more recent term *intentional design*—referring to spaces that are designed with 2D and 3D aspects to immerse, direct, or focus learner's attention; give cues or prompts for engagement; and are conceived and assessed with a conceptual plan.[22]

Also of interest is the *Framework for Evaluating Impacts of Informal Science Education Projects*, especially chapter 5, "Evaluating Exhibitions" by Sue Allen.[23]

7. "The Excellent Judges"

In 2006, I published *Judging Exhibitions: A Framework for Assessing Excellence*, which resulted from a collaboration of in-house and consulting exhibit

developers in Chicago who worked together for five years on the criteria for excellent exhibitions from a visitor-centered perspective.[24] Originally we set out to revise the AAM's criteria to include having the judges actually visit the nominated exhibitions, but we ended up steering away from the "award" purpose and turned instead to a strictly professional-development purpose. The main reason for the shift was that, while we could get solid agreement on what the criteria should be, we often could not agree on the degree to which some of the criteria were met in an exhibition. The point, we decided, was not to reach consensus or call for a democratic vote. The point was to hear other people's opinions and to value thoughts that were unlike our own. That point became grounded in the discussion of the criteria as each of us saw it enacted in the situation—the environment of the exhibition itself, much of which had to do with labels and interpretation. The end product was not an award; it was the experience of listening to the discussion for the benefit of the people who took part in it. Probably the biggest unique outcome for users of the EJ Framework is hearing and valuing the opinions of people who you don't necessarily agree with.

8. "A Framework for Summative Evaluation: Evidence for Its Viability"
This was a fabulous poster presented by Alice C. Fu of SK Partners LLC at the 2014 Visitor Studies Conference. She presented arguments for the value of summative evaluations and laid out a series of aspects that could improve their quality, consistency, and usefulness. An article that expands greatly on the poster discussion is currently in press for the journal *Visitor Studies*.[25] Watch for it.

9. AAM Awards for Excellence
The American Alliance of Museums hosts a competition for excellence in exhibitions each year, and the criteria are published online and include reference to excellence in museum labels. These criteria were developed collaboratively and have been updated several times by the AAM committees for curators, educators, and designers. Separately, a competition also within AAM is the Excellence in Museum Labels, which has no published criteria, but the winners and the judges' opinions are shared online.[26] The archives of past winners is a great source of examples, inspirations, and for critique sessions.



FIGURE 21.1
Judy Rand and Beth Kaminsky give two thumbs up to one of the winners in the AAM's Excellence in Museum Labels award at the 2014 annual convention.

EXAMPLES OF EFFECTIVENESS REVEALED IN SUMMATIVE STUDIES

While we are on the subject of excellence in exhibitions, I'd like to share some examples of "winners" from the competition and from visitor responses in summative evaluations. In the following four examples, often it is a remarkable object, specimen, or exhibit element that first captures people's attention, and then the labels serve to expand and enrich their experience.

The Gallery of Natural Sciences at Oakland Museum of California was recently renovated to put more emphasis on the human impact on nature. Exhibit developers worried that including evidence of environmental degradation would be depressing for visitors and that they wouldn't like the exhibits. Summative evaluation showed that a clear majority of the audience was able to hold two thoughts at the same time: We have caused great harm to nature, and nature is beautiful and fascinating.[27]



FIGURE 21.2
Visitors responded to this dead albatross specimen and label with shock and sympathy—and with curiosity about the impact of plastic on our ocean environment.

One of the most startling displays was of a dead albatross in a section of the gallery that showed dramatic underwater scenes and animals as well as the effects of plastic on the marine environment. Visitors could see what had happened to the bird, and the label reinforced it. A visitor commented:

> "When I saw the litter in the bird's stomach and probably caused him to die, I just connected to it because when you're walking in places outside you often see people's trash and then you see the birds. You don't necessarily connect that they would be eating the trash."

Another exhibit element featured live termites munching on a large slice of wood, a surprising encounter for visitors who looked closely and read the label. People expressed being both grossed out and fascinated watching them. Many felt lucky to get so close when the animals weren't a threat to them or their homes. At least seven responses described the benefits termites bring to nature, either generally or specifically.

> "Yeah, this one took me off guard. Because I didn't realize there were live termites in there. . . . There was another exhibit that had live snakes and lizards

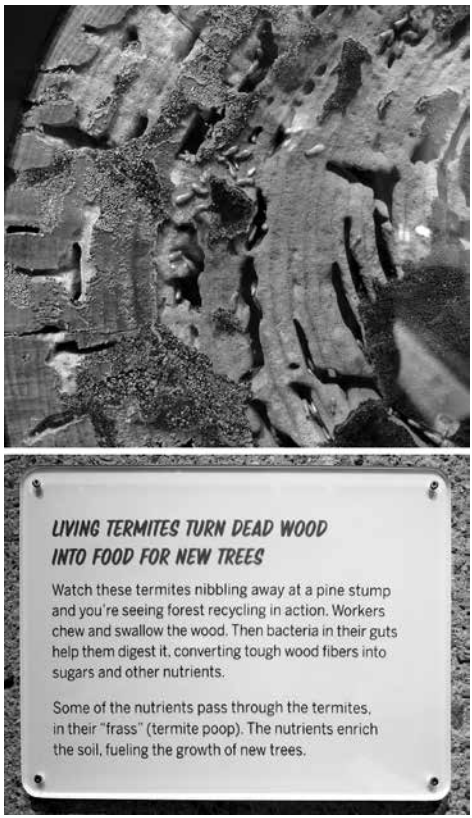


FIGURE 21.3
Whether it was the actual moving colony of termites or the label with the words "watch termites nibbling," visitors who came upon this exhibit were drawn to closely examine both.

so that kind of threw me off because I expected most of the exhibit to be, you know, not alive."

The dinner table projection in the *Dena'ina* exhibition at the Anchorage Museum was one of the most popular exhibits.[28] Visitors stopped to watch food being eaten and overhear a conversation in a mixture of English and Dena'ina, and they could read a label panel on the wall nearby that identified the food items. Data collectors who were observing during the tracking-and-timing exercise overheard several visitors' conversations about the table and the food, many of them joking, for example: "Dinner at our house would not be so polite."

New interpretive strategies, such as extended graphic labels, illustrated booklets, and section introductions, at the Detroit Institute of Arts were evaluated using a variety of methods.[29] The summative reports noted that the



FIGURE 21.4
An unexpected opportunity to join an ongoing dinner party in the *Dena'ina* exhibition drew visitors into a lifelike experience.

modest wall labels next to the art often served a primary and effective role in the visitor experience.

> "When I saw the description on the left that it was from an old painting and saw the implications about race, it made me think about all kinds of issues about culture, ethnicity, religion, women and that gave it a lot of meaning to me. It wasn't just some guy on a horse."

At the Cornell Laboratory of Ornithology visitor center in Ithaca, New York, "the view and the sounds" were mentioned frequently as what visitors enjoyed most.[30] The Sound Studio let visitors hear, see, and manipulate sounds of birds and other animals, read information about the sounds, and record their own imitations. Despite the fact that many users of the Sound Studio initially experienced some challenges with the technology ("Where do I start? What do I do?"), this exhibit afforded and produced more positive visitor experiences than any other interpretive device at CLO. Comparing it to the criteria in *Judging Exhibitions*, the Sound Studio showed evidence of many aspects of excellence from a visitor-centered perspective. The average time spent by visitors engaged in the Sound Studio was twelve minutes.



FIGURE 21.5
It took fewer than 100 words in two brief captions on wall labels to satisfy visitors' curiosity about this large, colorful, and striking painting.

This was a record amount of time at one exhibit according to my data and compared to a study done at the Exploratorium called "Fostering Active Prolonged Engagement," where the longest average holding time for an exhibit was eight minutes. Other remarkable data from CLO included: 61 percent of the users read out loud from the written information on the screen; 61 percent made comments that related information to their own experience, and 38 percent made a joke, for example:

> Red Howler Monkey—"Sounds like a skateboard park!"
> Laughing Kookaburra—"When I tell a joke that's how you're supposed to sound."



FIGURE 21.6
Activities in the Sound Studio at the Cornell Lab of Ornithology included selecting and seeing sounds, playing them forward or in reverse, slowing them down or speeding them up, recording your own sounds, looking at photos, and reading. The CLO studio held people's attention for an exceptionally long time.

Bowhead Whale—"You could use this for a horror flick."
Scarlet Tanager—"Sounds like a robin with a sore throat."

Effective and Award Winning

Psychology: Understanding Ourselves, Understanding Each Other is a great example of a collaborative, intentionally designed,[31] well-evaluated (front-end, formative, summative, and remedial) exhibition with a clear main message: Psychologists study the things that people do every day. The content—developed and vetted by several museums and academic and professional collaborators, scholars, and researchers—was expressed in forty interactive components. Summative evaluation showed that visitors stayed a relatively long time and read and engaged with over half the exhibits. The most compelling component in the exhibition was called "Walk on the Black Squares,"



FIGURE 21.7
"Please walk on the black squares only"—a controversial part of the award-winning and popular *Psychology Today* exhibition—addressed questions about why people do or don't obey instructions.

introduced visitors to research on authority and compliance. "Visitors most often remembered and commented on this exhibit, either positively or negatively."[32] The exhibition won the 1993 Curators' Committee Award for the exhibitions' "innovative translation of a subject into an exhibition format."[33]

Summative, collaborative, and metadata studies will help us reach a time when all types of evaluation will be standard practice in museums. Raising the priority of educational effectiveness, recognizing the importance of labels as primary communicators in exhibitions, and allocating more of the resources toward this objective will help get us there.

Research, evaluation, and visitor studies—regardless of the methodology—that challenge entrenched views by institutional staff will take time to have an impact on overall policy making or the specifics of exhibition development. We're getting closer—as these recent publications and projects attest—and there's no reason to stop trying.

NOTES

1. Harris Shettel, *An Evaluation of Visitor Response to* Man in His Environment, Report no. AIR-43200-7/76-FR (Washington, DC: American Institutes of Research, 1976). This is also available as a technical report from the Center for Social Design, Jacksonville, Alabama.

2. Harris Shettel, et al., *Strategies for Determining Exhibit Effectiveness*, Report no. AIR-E95-4/68-FR (Washington, DC: American Institutes for Research, 1968).

3. "Profile of an Exhibit: Evaluation Report" is a 1992 unpublished study done by Serrell & Associates for the Pratt Museum in Homer, Alaska. Data were gathered while the exhibition was at the Oakland Museum in California.

4. Sue Allen, "Looking for Learning in Visitor Talk: A Methodological Exploration," *Exploratorium*, 2002, http://www.exploratorium.edu/vre/visitor_research/allVRE.htm.

5. Paulette McManus, "It's the Company You Keep . . . The Social Determination of Learning-Related Behavior in a Science Museum," *International Journal of Museum Management and Curatorship* 6 (1987): 263–70; and Lois H. Silverman, "Visitor Meaning-Making in Museums for a New Age," *Curator: The Museum Journal* 38, no. 3 (1995).

6. Britt Raphling and Beverly Serrell, "Capturing Affective Learning," in *Current Trends in Audience Research and Evaluation, Volume 7* (AAM Committee on Audience Research and Evaluation, 1993); and see the Methods section in Beverly Serrell, *Paying Attention: Visitors and Museum Exhibitions* (Washington, DC: American Association of Museums Press, 1998).

7. Detroit Institute of Arts, "Phase 2 Summative Evaluation of DIA Interpretive Strategies" (unpublished report, Detroit Institute of Arts, 2012); and Serrell & Associates, "Gallery of California Natural Sciences, Oakland Museum of California Summative Evaluations" (unpublished report, Serrell & Associates, August 2014).

8. Serrell & Associates, "1992 Visitor-Use Survey at Old South Meeting House" (unpublished report, Serrell & Associates, 1992).

9. Ellen Giusti, evaluator for the American Museum of Natural History, has presented information from this ongoing project at VSA meetings and at AAM in 1997. "Call of the Wild: Are Visitors Listening?: A Multisite Evaluation of *Global Warming: Understanding the Forecast*," an unpublished paper.

10. Randi Korn, "An Analysis of Differences between Visitors at Natural History Museums and Science Centers," *Curator: The Museum Journal* 38, no. 3 (1995): 150–60.

11. Science Museum of Minnesota, "*Water*: Comparative Timing and Tracking Report" (unpublished study, Science Museum of Minnesota, June, 2009).

12. www.informalscience.org.

13. Beverly Serrell, "Building Informal Science Education (BISE) Research Synthesis, A Review of Recommendations in Exhibition Summative Evaluation Reports," *Visitor Studies Association—BISE*, October 12, 2013, http://visitorstudies.org/bise.

14. This is a word I've heard Sue Allen use. My editor keeps changing this word to *apprehensibility*, but they don't mean the same thing. Being apprehensive means being nervous—the opposite of what I want to infer. Would *understandable* be better? Sue says she likes *apprehendability* because of its sense of immediacy, not something you gradually make sense of. I agree. See Allen & Associates, Secrets of Circles Summative Evaluation Report (report prepared for the Children's Discovery Museum of San Jose, October 2007).

15. Getty Center for Education in the Arts and J. Paul Getty Museum, *Insights: Museums, Visitors, Attitudes, Expectations: A Focus Group Experiment* (Malibu, CA: J. Paul Getty Trust and Getty Center for Education in the Arts, 1991).

16. Beverly Serrell, "Using Behavior to Define the Effectiveness of Exhibitions," in *Museum Visitor Studies in the 90s*, ed. S. Bicknell and G. Farmelo (London: Science Museum, 1993), 140–45; and Beverly Serrell, "The 51% Solution Research Project: A Meta-Analysis of Visitor Time/Use in Museum Exhibitions," *Visitor Behavior* 10, no. 3 (Fall 1995), plus a response by Harris Shettel.

17. Beverly Serrell, *Paying Attention: Visitors and Museum Exhibitions* (Washington, DC: American Association of Museums Press, 1998).

18. InformalScience.org, http://www.informalscience.org/perspectives/blog/paying-more-attention-to-paying-attention.

19. Carolyn P. Blackmon, Teresa K. LaMaster, Lisa C. Roberts, and Beverly Serrell, *Open Conversations: Strategies for Professional Development in Museums* (Chicago: Field Museum of Natural History, 1988). This book includes wonderful illustrations by Linda Kellen. Used copies can be found on-line.

20. John H. Falk, Lynn D. Dierking, and Susan Foutz, *In Principle, In Practice: Museums as Learning Institutions* (UK: AltaMira Press, 2007).

21. Philip Bell, Bruce Lewenstein, Andrew W. Shouse, and Michael A. Feder, ed., *Learning Science in Informal Environments: People, Places and Pursuits* (Washington, DC: National Academies Press, 2009).

22. "Intentionally Designed Spaces," *Exhibitionist* 33, no. 1 (Spring 2014).

23. Alan J. Friedman, et al., Framework for Evaluation Impacts of Informal Science Education Projects (report from a National Science Foundation Workshop, February 2008).

24. Beverly Serrell, *Judging Exhibitions: A Framework for Assessing Excellence* (Walnut Creek, CA: Left Coast Press, 2006).

25. Alice Fu, personal communication: "Our article has been accepted for publication in *Visitor Studies*. We are revising it now, and it's expected to appear in the spring (April) 2015 issue." Authors: Alice C. Fu, Lisa Peterson, Archana Kannan, Richard J. Shavelson, and Amy Kurpius.

26. American Alliance of Museums, Excellence in Exhibition Label Writing Competition, http://aam-us.org/about-us/grants-awards-and-competitions/excellence-in-label-writing.

27. Serrell & Associates, "Gallery of California Natural Sciences."

28. Serrell & Associates, "The Dena'ina Way of Living, Summative Evaluation" (unpublished report for the Anchorage Museum, Serrell & Associates, 2014).

29. Detroit Institute of Arts, "Phase 2 Summative Evaluation of DIA Interpretive Strategies" (unpublished report, Detroit Institute of Arts, 2012).

30. Serrell & Associates, "Cornell Lab of Ornithology: Summative Evaluation of the Interpretive Elements in the Visitor Center" (unpublished report for the Cornell Lab of Ornithology, Serrell & Associates, 2006).

31. This is defined as spaces that are designed with 2D and 3D aspects to immerse, direct, or focus learner's attention; give cues or prompts for engagement; and are conceived and assessed with a conceptual plan. See the Spring 2014 "Intentionally Designed Spaces" issue of *Exhibitionist*, referenced in note 22, that explores this topic with many excellent examples.

32. Gretchen Jennings, "Psychology: Understanding Ourselves, Understanding Each Other," in *Are We There Yet? Conversations about Best Practices in Science Exhibition Development*, ed. Kathleen McLean and Catherine McEver (San Francisco, CA: Exploratorium, 2004), 55–59. See also a case study by Gretchen Jennings in ExhibitFiles.org.

33. The Curator's Committee Award preceded the later collaborations with the two other standing professional committees of AAM that make up the current Excellence in Exhibition annual competition.

V

CONCLUSIONS

22

Findings from Research and Evaluation

Research and evaluation can help us make better decisions about exhibition design so that more visitors will want to read the labels.

Effective labels and effective exhibitions are unique combinations of a myriad of variables that together can enhance or deter communication. The sixteen conclusions below are based on published empirical research data, unpublished evaluation studies, and the collected wisdom of label writers, designers, exhibit developers, and evaluators who have been working to improve labels for years.[1]

1. When visitors have good conceptual and spatial orientation in exhibitions, they are more likely to spend more time.
2. When visitors spend more time, they tend to use more parts of the exhibition, which gives them opportunities to learn more.
3. More visitors read shorter labels, and read them more thoroughly than longer labels.
4. The most popular parts of a good exhibition will attract a broad cross-section of the audience, not a special subgroup.
5. Among adults, those who read labels and those who use interactive devices are not two separate audiences.

6. Labels placed higher than six or seven feet off the ground are often not seen by visitors.
7. Interpretive kiosks and labels in the middle of the room are often skipped as visitors move along the walls.
8. Labels placed directly next to what they are about will be read more than labels keyed by a number on the text and placed at a greater distance away.
9. Labels next to dimensional elements in exhibits get read more than flat-label panels on the wall, without objects nearby. This includes introductory and orientation information.
10. Chunking information into short paragraphs, twenty-five to fifty words each, increases the likelihood of reading.
11. Labels that contain concrete, visually referenced information will increase visitors' tendency to read-look-read-look, pointing and talking.
12. Labels that visitors find interesting will be read aloud more than others. Reading aloud increases intragroup social behaviors.
13. Visitors who read labels spend more time and do more things in exhibitions overall than nonreaders of any age.
14. More adults will read label text to children when labels are easy to read out loud without the need to paraphrase or translate unfamiliar vocabulary words (for themselves or their children).
15. Adults—because they are accustomed to receiving information through the written word—will work harder to get it than children. Children will read labels if the labels provide them with easily accessible and useful information.
16. Labels with images and words working together are more attractive, meaningful, and memorable to more visitors than all-text labels.

My hat is off to Stephen Bitgood for raising the research questions and gathering the data that have led to many of these conclusions. He has been studying visitor behavior and documenting the things that work (or fail to work) for years. A recent summary publication of much of his work with many bibliographic references is online at www.museumsetc.com.[2]

The Exploratorium's Department of Research and Evaluation publishes findings from many of their excellent studies online. The study reports are not guidelines per se, but they contain a wealth of information about visitor behavior, research methods, theory, and practice.[3]



FIGURE 22.1
Did this amorous couple who visited the exhibition actually read the labels? Yes, because they were done right.

The scope of these guidelines clearly takes us beyond writing interesting, short, well-crafted, visitor-comprehensible, legible labels. It makes effective communication of the whole exhibition a goal. It takes more than increased knowledge and improved skills of individual professionals. "Our eyes are on another professional guideline—creating integrated presentations of well-written words with objects, illustrations and interactives—that really work, and to do this requires extraordinary teamwork and lots of formative evaluation."[4] But if all eyes are on the same prize, it's sure to be within reach.

The guidelines listed here in the Introduction will not guarantee success, but they will help you avoid problems that prevent effective interpretation. Good luck!

NOTES

1. A comprehensive bibliography of published studies can be found in C. G. Screven, ed., *Visitor Studies Bibliography and Abstracts*, third edition (Shorewood, WI: Exhibit Communications, Research, Inc., 1993). For more up-to-date references, see the citation below for Bitgood, 2014.

2. Stephen Bitgood, *Engaging the Visitor: Designing Exhibits That Work* (Cambridge, MA: MuseumsEtc., 2014), http://museumsetc.com/products/engaging.

3. Website for Exploratorium, http://www.exploratorium.edu/vre/evaluation.html.

4. Frances Kruger, interpretive specialist, Denver Museum of Nature and Science, personal communication. I quoted Frances in the 1996 edition of *Exhibit Labels*, and what she said then is still very true today.

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Figure 13.3, p. 171 Photo by Darcie Fohrman, courtesy of Levine Museum of the New South.
Figure 13.4, p. 175 Photo by George Bennett, courtesy of Natural History Museum of Los Angeles County.
Figure 14.1, p. 179 Photo by Cathleen Donnelly.
Figure 14.2, p. 179 Photo by Hannah Jennings.
Figure 14.3, p. 180 Illustration by L. Kellen.
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Figure 20.2, p. 290 Photo by Kenneth Morris.
Figure 20.4, p. 293 Photo courtesy of Chicago History Museum.
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Figure 21.7, p. 321 Photo courtesy of Gretchen Jennings.
Figure 22.1, p. 329 Illustration by L. Kellen.
All other photographs by B. Serrell and K. Whitney.

Index

AAM. *See* American Alliance of Museums
AASLH Award of Merit, for MHS, 255
active participation, 80
ADA. *See* Americans with Disabilities Act
Adams, Katherine, 195
adhesives, for label production and fabrication, 288
Adobe Creative Suite graphics software, 290
Alexander Ramsey House visitor panels, at MHS, 253–55
Allen, Sue, 163, 190, 313
All Hands on Deck interactive exhibit, at USS *Constitution* Museum, 132, *198*, 198–99
alliteration, 119–20
Alt, M. B., 63–64
American Alliance of Museums (AAM): Awards for Excellence, 314, *315*; conference, 135; design competition, 267; MHS, Brooking prize Honorable Mention, 255; for production materials, 287
American Museum of Natural History (AMNH): Alaska moose diorama, *53*, *54*, 55–57; capital letters use at, *277*; *Creatures of Light* exhibit iPads use, 206; dioramas, 292; *Global Warming* exhibition, 308, 309; iPads use, 220; visitors, 55–57
Americans with Disabilities Act (ADA), on typography contrast, 274
AMNH. *See* American Museum of Natural History
Anchorage Museum, *52*; *Dena'ina* exhibition, 108–9, 208, 317, *318*; interactive prototypes, *260*
Anila, Swarupa, 127
Animal Attraction exhibition, at California Academy of Sciences, *220*, 221–24
Animal Eyes traveling exhibition, at San Francisco Museum of Vision, *88*, 90, 154–55

Are We There Yet? Conversations About Best Practices in Science Exhibition Development (McLean and McEver), 102
Art Gallery of Toronto, 109
Art Institute of Chicago, 74th American Exhibition, 66, *66*
ArtLens app, 214
Asher, Michael, 66, *66*
Asian Art Museum, *33*, 141
audience segments, 69, 147
audio labels, 95, 249

backlit labels, 275, 291–92
Bechtol, Keith, 220, 225–26
Becker, Barbara, 152
"A Beginner's Guide to Vinyl Lettering Systems," 294
Bernstein, Shelly, 206
Beyond Numbers exhibition, at Maryland Science Center, 158
Big Bend National Park, 26, *27*
big ideas: advantages of, 15–16; communication goals guided by, 149; consensus for, 12, *17*; controversial ones, 16; defining, 7–9; evaluation and, 18; *Evolution & Health* exhibit, of New York Hall of Science, *10*, *11*; exhibit elements and, 12; exhibitions not needing, 13; of Huntington Conservatory, *16*; Indiana Children's Museum dinosaur exhibit, *8*; interpretive labels and, 12, 13; labels relation to, 2; lacking, 13; process behind, 11–12; subject-verb-so what examples of, 9–10; topics compared to, 9–10; use of, 12; written, 17
Bilingual Exhibits Research Institute, 106
bilingual labels: Canadian Museum of History, 111; design process for, 111, 114–16; distinguishing languages, 111, 114–16; Miami Science Museum, 110–11, *111*; planning for, 107–9; *El Solitario George*, at Darwin Research Center, *114*
Billy Graham Museum, 58
BISE. *See* Building Informal Science Education
Bitgood, Stephen, 127, 328
body copy: legibility of, 269–71; readability of, 283–84
bold face type, 273; dioramas use of, *274*
booklets, laminations in, *290*
Bormuth formulas, for text, 92
Borun, Minda, 195–97
Brainard, Jessica G., 220, 221–24
Brevard Zoo in Florida, *179*
bring-your-own device (BYOD) programs, 219
Brookfield Zoo, 64, *153*; evaluation, 246; virtual tour, *164*; *Voices of the Forest* exhibition, 137, *138*; wayfinding and orientation signs, *41*, 176
Brooklyn Children's Museum, *91*
Brooklyn Historical Museum front-end evaluation, 251
Brooklyn Historical Society, *Public Perspectives* gallery, 137
Brooklyn Museum, 211; iPads use, 206
budget: for summative evaluations, 303; time planning, 152–53
Building Informal Science Education (BISE) Research Synthesis, 309–10

Butler, Barbara H., 21
BYOD. *See* bring-your-own device

CAISE. *See* Center for Advancement of Informal Science Education
California Academy of Sciences: *Animal Attraction* exhibition, *220*, 221–24; iPads use, 220, *220*, 221–24
California Museum of Science and Industry, *Molecules in Motion* exhibit, 303
Canadian Museum of History in Gatineau, Québec, 111, *115*; Canadian Museum of Civilization, 52
captions, 35; guidelines for, 36–39; for interactive exhibits, 38; length of, 43, *43*, 118, 278, *279*, 284; outdoor wayside panels, 38–39, *39*; "Rain Mask" caption example, 37–38; type size, 275
"Capturing Affective Learning," 307
case studies: An Aquarium's First Foray into iPad Labels, Brainard, 221–24; A Desert Grave Wayside, Serrell, 26; Draw Yourself, Nelson, 130–31; An Electronic Gathering: A Thought Riff, Wynn, 238; Less Was More, Serrell, 102–3; Lessons Learned from Multilingual Audiences, Plaza, 112–13; Leave Room for Flexibility, Whitney, 154–55; My Dog, Serrell, 14–15; A Multiple System Integrated Deployment of Cutting-Edge Interpretative Technology, Stevens, 213–15; My First Formative Evaluation, Serrell, 245; New Labels for Old Dioramas, Halderman, 55–57; Nintendo at the Louvre, Bechtol, 225–26; Notes on a Digital Media Evangelist: Ten Lessons from Twenty Years of Museum Media Integration, Sayre, 216–19; Reading the Landscape, Roberts, 140; Reading Level Rationale, Jones, 89–90; Unexpected Label, Becker, 152; Using Visitor Panels, Fischer, 253–55
cast metal, for outdoor labels, 298
Center for Advancement of Informal Science Education (CAISE), 309
Chambers, Marlene, 117
Charles A. Lindberg Historic Site, 255
Chicago History Museum: *Out In Chicago* exhibit at, *58*, 208; question use, *185*; theatrical spotlights, 293; video use, 208
children: museums, reading level in, 90–92; as visitors, 51
Children's Discovery Museum of San Jose, 108
Chun, Gordon, 272
chunks instead of layers, 155–56
Cincinnati Nature Center, *126*
Cleveland Museum of Art (CMA), 52; ArtLens app, 214; Collection Wall, 214; Gallery One digital interpretive devices, 212; Gallery One iPads use, 206; "Lenses" interactive displays, 212–13; Stevens on Gallery One, 212–15
clip art, 172
CLO Sound Studio summative study, 318–19, *320*
CMA. *See* Cleveland Museum of Art
Coast to Cactus in Southern California, at San Diego Natural History Museum, 89–90

Coleman-Liau formulas, for text, 92
collaborative research studies: AAM Awards for Excellence, 314, *315*; BISE Research Synthesis, 309–10; CAISE and, 309; "A Framework for Summative Evaluation: Evidence for Its Viability" poster, 314; Getty Insights Project, 310–11; *In Principle, in Practice*, 313; *Judging Exhibitions: A Framework for Assessing Excellence*, 313–14, 318; *Open Conversations: Strategies for Professional Development in Museums*, 312–13; *Paying Attention: Visitors and Museum Exhibitions*, 311–12; people, places, and pursuits, 313
columns of texts, 279–80
commercial user-testing lab, *215*
Committee on Learning Science in Informal Settings, "Science Learning in Designed Settings" chapter, 313
computer graphics software, 290
consensus, for big idea, 12, *17*
Conservation DistList, 287
Conservatory Cookbook, 288
Conservatory for Botanical Science, *Conservatory Cookbook* of, 288
contrast rules, in typography, 274–75
controversial big ideas, 16
Cooper Hewitt, 268
core editing, 94–95
Cornell Laboratory of Ornithology, Sound Studio at, 318–19, *320*
Courage exhibit, at Levine Museum of the New South, *171*
Creatures of Light exhibition, at AMNH, 206
credit panels, 31, 41
Cron, Lisa, 23
cross-departmental teams for projects, 217
Curators' Committee Award, 321
cut vinyl, 293–94

Darkened Waters: Profile of an Oil Spill exhibition, 28, 311; section labels of, 35; summative evaluation of, 305–6; voice in, 136
Darwin, Charles, *20*
Darwin Research Center, *El Solitario George* at, *114*
de Champlain, Samuel, 52–53
demographic and behavioral similarities, of visitors, 49–52
Dena'inaq' Huch'ulyeshi: The Dena'ina Way of Living (*Dena'ina*) exhibit, at Anchorage Museum: summative study, 317, *318*; video projection, 208
Denver Art Museum, 64; Chambers of, 117; quotation use, 122
Denver Museum of Natural History, *Prehistoric Journey* exhibition at, 157–58
Department of Research and Evaluation, at Exploratorium, 192–93, 328
design: bilingual labels process, 111, 114–16; cues, consistency of, 148–49; instructional, 83; label, for label's content or context, 2. *See also* exhibition design; graphic design choices; type design; typographic design
desktop publishing software, 288
Detroit Institute of Art (DIA), 33, *34*, *38*, 317–18; freelance label writers at,

235; summative studies effectiveness, 317–18; video projection at, 208; as visitor-friendly museum, 127–29, 132; on visitor motivations, 74–75; word number, *99*, 103–4
diagrams use, for interactive exhibits, *193*, 193–94
Did You Know questions, on flip labels, 180–81
Dierking, Lynn, 65
difficult ideas and stories: at Exploratorium, 150; well handled, 28–29
digital devices: in gallery, 282–83; labels annotation through, 227–28; for wayfinding and regulatory signs, 224
digital interpretive devices, 204–29; agenda offered by, 227; "Call the Bridge," of Exploratorium, 209; case studies, 212–24; at CMA Gallery One, 212; digital impacts on labels, 204–5; digital labels pros and cons, 207; exhibits and, 208–9; hot spots flagged, 227; at Huntington Library, 209; introductions provided by, 227; iPads, 205–7, 220, *220*, 221–24; personal smartphone, 209–11; test and critique, 212; "Text Fish," of Exploratorium, *210*; use of, 224–28; visitors labels annotation, 227–28; for wayfinding and orientation, 224; wordless and spoken labels, 207–8
digital interpretive devices lessons, by Sayre: 217-19
digital labels, pros and cons, 207
digital screens, 292–93
diligent visitors, 205, 312
dinosaur exhibit: of eggs, *168*; at Indiana Children's Museum, *8*; at LAMNH, *88*
dioramas: Alaska moose, at AMNH, *53*, *54*, 55–57; reading rail, 101; at AMNH, 292; bold face type use in, *274*
direct printing, 291, 292, 298; on Plexiglas, 295
documentation, in label writing, 237, 239
Doing It Right: A Workbook for Improving Exhibit Labels (Punt), 264
donor information, 40, 275
donor plaques, 31, 40–41, 298
dumbing down, 159
Duratrans and backlit film, 275, 291–92

Ebert, Roger, 63
editing process, for labels, 239–43; in context before opening, 170; core editing, 94–95
EJ Framework, 314
electronic labels, 43, 249
Elliott, Jennifer, 111
engraved plastic labels, 298
Enola Gay exhibition, 16
Environmental Protection Agency (EPA), 300
etched metal and engraved plastic, for outdoor signs, 298
evaluation, after opening: effectiveness, of summative studies, 315–21; remediation, summative evaluation for, 302–4; summative evaluation possibilities, 304–14
evaluations, 244–65; big idea and, 18; Brookfield Zoo, 246; front-end,

248–56; for interactive exhibits labels, 202; of labels production and fabrication, 300–301; of production and fabrication, 300–301; reasons for, 244, 246–47; sample sizes for, 247–48; types of, 247. *See also* formative evaluations; front-end evaluations; summative evaluations
Evolution & Health exhibit, of New York Hall of Science, *10*, *11*
"Excellent Judges," 313-14
exclamation points, 121
Exhibit Builder, 287
exhibit design: AAM competition, 267; planning process, 149
exhibit elements: big idea and, 12; testing, in formative evaluation, 259–62
exhibition design, visitor preferences and, 76–82; active participation or vicarious watching, 80; concentration and relaxation, noisy or quiet, 81–82; pace controlled or not controlled, 78–79; peer group or expert led, 79–80; sequenced or unsequenced, 78; verbal and nonverbal stimuli, 80–81
The Exhibitionist journal, of NAME, 287; "Exhibition Critique," 212; "Green and Lean" issue, 300; on vinyl tape, 294
exit surveys or interviews, 304
expert led exhibition design, 79–80
Explo font creation, by Exploratorium, 267
Exploratorium, San Francisco, 190; "Call the Bridge" digital interpretive device, 209; Department of Research and Evaluation, 192–93, 328; difficult ideas at, 150; digital translations, 108, *109*; Explo font creation, 267; "Fostering Active Prolonged Engagement," 318–19; *Nerve Speed Indicator*, 261, *262*; sans serif font, *268*; "Text Fish" digital interpretive device, *210*
Exploratorium model for interactive exhibits labeling: beyond, 195–97; Department of Research and Evaluation, 192–93; format, 191; formulaic style of labeling, 192; *Light Island* exhibit, *194*, 194–95; use diagrams, *193*, 193–94
extended interpretive labels, *38*

Falk, John, 65; on visitor identities, 71
fiberglass embedment, 297
Field Museum of Natural History, Chicago: on five visitor types, 72; formative evaluation, 245; front-end interviews at, 249; "Museums: Agents for Public Education" project, 312–13; *Nature Walk* interactive exhibit, *201*; Shettel summative evaluation on *Man in His Environment*, 305; summative evaluation and, 303; title label, *104*
"Finding Your Voice" (Rand), 135
Fischer, Daryl, 253–55
flatbed or direct printing, 291, *292*, 298
Flesch-Kincaid formula, 92
Flesch-Kincaid Grade Level test, 283
Flesch Reading Ease Test, 283
flexibility: in exhibit experiences, 153–55; for visitor-friendly labels, 125
Flickr Creative Commons, 172

flip labels, 158; Did You Know questions, 180–81; objects used in questions for, 185, *185*; questions, 183–86; at Shedd Aquarium, *100*
floor plans, for wayfinding and regulatory signs, *42*
focus groups, for front-end evaluations, 62, 64, 252
Focus Groups: A Practical Guide for Applied Research (Krueger), 252
Fohrman, Darcie, 141
Forces of Change exhibition, at OMCA, 137
formative evaluations, 245, 247, *263*; for Anchorage Museum interactive exhibits, *260*; Field Museum of Natural History, Chicago, 245; interactive exhibits questions, 260–61; label copy questions, 257–58; observe, refine, test again, 262–64; on please-touch message labels, *257*; testing interactive labels and exhibit elements, 259–62; testing label copy, 256–59; on *Wild Minds* exhibit, *258*, *259*
Formica surfaces, silkscreening on, 296
Fort Worth Museum of Science and History (FWMSH), *Whodunit? The Science of Solving Crime* at, 102–3
"Fostering Active Prolonged Engagement," at Exploratorium, 318–19
fovea, letters on, 275–78
Framework for Evaluating Impacts of Informal Science Education Projects, 313
"A Framework for Summative Evaluation: Evidence for Its Viability," 314
Franklin Institute, 195
free art, 172
freelance label writers, 234; at DIA, 235
Free to Explore a Museum--Embodied Inquiry and Multimodal Expression of Meaning (Renner), 89
"From Hands On to Minds On: Labeling Interactive Exhibits" (Borun and Adams), 195–97
From Knowledge to Narrative: Educators and the Changing Museum (Roberts), 60
front-end evaluations, 247; Brooklyn Historical Museum, 251; focus groups, 62, 64, 252; interviews, 249–51, *250*, 254; use of, 93–94; visitor panels, 252–56
front-end interviews, 249–51, *250*; at Field Museum of Natural History, Chicago, 249; for *Manufacturing a Miracle: Brooklyn and the Story of Penicillin*, 251; at MHS, 254
Frost Science Center in Miami, 107
Fu, Alice C., 314
FWMSH. *See* Forth Worth Museum of Science and History

Gallery of Natural Sciences, at OMCA, 315–16, *316*
Gallery One, of CMA: digital interpretive devices, 212; iPads use, 206; Stevens on, 212–15
Gardner, Howard, 70–71
generalizations to specifics, 173–74
Getty Center for Education in the Arts, 310–11
Getty Insights Project, 310–11
Getty label, as interpretive label, *23*

Getty Museum of Art, 44, 267; label writing guidelines, 235
Global Warming exhibition, of AMNH, 309; summative evaluation of, 308
graphic design choices, 157–58; typical errors from, 1
"Green and Lean" issue, of *The Exhibitionist*, 300
group labels, 35
guidelines: 117-27; for captions, 36–39; institutional, 235; Miami Science Museum bilingual interpretation, 110–11; vocabulary levels, 92–96
Gutwill, Josh, 190

Haiku, 120
Haitian-Creole speakers, 112–13
Halderman, Lauri, 55–57
Ham, Sam H., 21
hand-written label, *282*
Harris, Neil, 137
headline, 110, 125, 268–69, 278
Heart Mountain Japanese internment camp, 28
Helvetica typeface, Miedinger creation of, 272
hierarchies, in exhibit experiences, 147–60; chunks instead of layers, 155–56; feet from floor defining, 153; flexibility, 153–55; hierarchy of knowledge layering system, 159; intrinsic complexity defining, 149–50; IQ layering system, 158–59; layers and levels approach pitfalls, 156–60; more-interested-visitor layering system, 157–58; purpose defining, 148–49; something-for-every-special-audience layering system, 156–57; time defining, 150–53
high pressure laminate (HPL) panels, 297
Hoefler & Company, typeface creation by, 267–68
Honolulu Zoo, *51*
Hopkins, Ken, 298
HPL. *See* high pressure laminate
Human Biology exhibition, at Natural History Museum in London, 157
human body slices exhibit, at Museum of Science and Industry, Chicago, 168–70, *169*
humor, for visitor-friendly labels, 121
Huntington Conservatory: big idea of, *16*; *Plant Lab*, *93*, *162*, *289*
Huntington Library, *32*; Darwin's theory of natural selection display, *20*; digital interpretive devices, 209

icons, *176*; images working with, 176
ideal exhibits, Alt and Shaw on, 63–64
identification labels (ID labels), 31, 39–41
ID labels. *See* identification labels
images, words and: in entire exhibition context, 174, 176–77; as feeling, 166; free art, 172; generalizations and multiple images, 172–73; icons working with, 176; iterative process, 171–72; planning and evaluating, 167–71; start with specifics, 173–74; three-dimensional objects, 166; verbal and visual content integration, 167
imagination, interpretive labels and, *25*

Imaging Science interactive exhibit, at Museum of Science and Industry, Chicago, 195–96
Indiana Children's Museum: dinosaur exhibit big idea, *8*; question use at, *179*, 180
Industrial Detail, label writing for, 240
informative paragraph titles, 124–25
Ingenthron, Mary Kay, 253
In Principle, In Practice, 313
Insights; Museums, Visitors, Attitudes, Expectations, 311
institutional systems, examples of, 43–44
instructional design, 83
interactive devices mock-up, 62, 261
interactive exhibits: *All Hands on Deck*, at USS *Constitution* Museum, 132, *198*, 198–99; Anchorage Museum formative evaluation, *260*; captions for, 38; diagrams use for, *193*, 193–94; Gutwill and Allen on, 190; *Imaging Science*, at Museum of Science and Industry, Chicago, 195–96; labels for, 31–32, 190–203, *201*; "Lenses," at CMA, 212–13; McLean on, 190; mock-ups of, 195, 199, 259; *Nature Walk,* at Field Museum of Natural History, Chicago, *201*; questions, in formative evaluations, 260–61; whole-body interactives, *50*
interactive exhibits, labels for, 31–32, 190–203; evaluation, 202; beyond Exploratorium model, 195–97; Exploratorium model for, 191–95; informal science writing *versus* label writing, 191; keeping it simple, 200, *201*; placement and physical-action words, 197–200; visitors literal reading, 199–200
interactive labels testing, in formative evaluation, 259–62
interpretation: Ham and Veverka on, 21; history of, 20–21; labels emphasis, 2; Miami Science Museum bilingual guidelines for, 110–11; Tilden on principles of, 20–21; Wells, Butler, Koke on, 21
Interpretation: Making a Difference on Purpose (Ham), 21
Interpreting Our Heritage (Tilden), 10
interpretive exhibitions, 19
"Interpretive Graphic Standards," of Liberty Science Center, 268
interpretive labels, 19–30; AMNH moose diorama, *53*, *54*, 55–57; Big Bend National Park, 26, *27*; big idea and, 12, 13; captions, 35–36; difficult stories well handled, 28–29; examples, 24; extended, *38*; Getty label, *23*; group labels, 35; imagination and, *25*; introductory or orientation labels, 32, 33, 34; with meaningful stories, 24–28; at Museum of History and Industry in Seattle, *22*; purpose of, 19; section labels, 34–35; as storytelling, 22–25; three-part label, *36*; title labels, 32, *104*; types of, 31, 32–36, *43*. *See also* noninterpretive labels
Interpretive Master Planning (Veverka), 21
Interpretive Planning for Museums: Integrating Visitor Perspectives in Decision Making (Wells, Butler, and Koke), 21

interpretive strategy, 216
interpretive technology segregation, 218
interviews: exit surveys or, 304; front-end, 249–51, *250*, 254
intrinsic complexity, exhibit experiences defined by, 149–50
introductions, digital interpretive devices providing, 227
introductory labels, 32; orientation information, 33; prominence and importance of, 34
iPads use: by AMNH, 220; by *Animal Attraction* exhibition, at California Academy of Sciences, *220*, 221–24; by Brooklyn Museum, 206; by California Academy of Sciences, 220, *220*, 221–24; for *Creatures of Light* exhibit, at AMNH, 206; in Gallery One, of CMA, 206
IPOP visitor typologies, of Pekarik, 72–73
IQ layering system, 158–59
iterative process, 171–72

J. Paul Getty Museum, 310–11
Judging Exhibitions: A Framework for Assessing Excellence (Serrell), 313–14, 318

Kaminsky, Beth, *315*
Kennedy, Jeff, 264
Koke, Judith, 21
Korn, Randi, 308
Krueger, Richard, 252

LaBar, Wayne, 209
label copy testing, in formative evaluation, 256–59
labels: beyond, 45–46; backlit, 275, 291–92; commandments for, 2–3; with concrete, visual references, 2; design, content or context reflection, 2; digital impacts on, 204–5; editing process for, 94–95, 170, 239–43; electronic, 43, 249; flip, *100*, 158, 180–81, 183–86, *185*; formulaic style of, 192; group, 35; hand-written, *282*; ID, 31, 39–41; for interactives, 3; interpretation emphasis, 2; introductory, 32, 33, 34; lengths, 2, 43, *43*; one exhibition limits for, 42–43; random access to, 45; in restrooms, 150–51, *151*, 152; section, 34, 35; types of, 31–46; wordless, digital interpretive devices and, 207–8. *See also* bilingual labels; commandments; images, words and; interpretive labels; multilingual labels; noninterpretive labels; outdoor labels; production and fabrication; visitor-friendly labels
labels that ask questions, 178–89; Did You Know questions, 180–81; flip label questions, *183*, 183–86, *184*; open-ended questions, 186, *187*; talkback panels questions, 187–89, *189*; Why questions, 181–83
label writing: documentation, 237, 239; draft, *242*; editing process, 94–95, 170, 239–43; electronic gathering for, 238; finishing, 243; for *Industrial Detail*, 240; manuals of style, 235; narrative walk-through, 233; organization, 236–37; person for, 233–35; reviewers for, 241–42; scheduling time, 235–36; science

writing *versus*, 191; two-column set up, *237*
label writing guidelines: of Getty Museum of Art, 235; of Liberty Science Center, 235; of OMCA, 235; of Victoria and Albert Museum, 235
Lake Michigan Lake Prism, *139*
laminations, 289; in booklets, *290*; at Huntington Conservatory *Plant Lab*, *289*
LAMNH. *See* Los Angeles Museum of Natural History
language: bilingual labels distinguishing, 111, 114–16; fundamentals and, of typography, 267–69
laser printing, 270
layering system: hierarchy of knowledge, 159; IQ, 158–59; more-interested-visitor, 157–58; something-for-every-special-audience, 156–57
layout, line length and, 278–79
learning styles, 147–48; McCarthy on, 75–76
Lefever, Joel, 253
legibility: of body copy, 269–71; typography, 3
lengths: of captions, 43, *43*, 118, 279, *279*, 284; of labels, 2, 43, *43*; line, in layout, 279; sentence variation, 118
"Lenses" interactive exhibits, at CMA, 212–13
Levine Museum of the New South, *Courage* exhibit at, *171*
Liberty Science Center, 44; "Interpretive Graphic Standards," 268; label writing guidelines, 235
Licko, Zuzana, 270
"Life" exhibit, at Utah Museum of Natural History, 200, *201*
Light Island exhibit, of Exploratorium, *194*, 194–95
line length, layout and, 279, *279*
Los Angeles Museum of Natural History (LAMNH), 132, *211*; dinosaur exhibit, *88*; "Respect the Rat" panel at, *133*; situated copy, *175*
Louvre, Nintendo at, 220, 225–26

Man in His Environment, at Field Museum, 305
manuals of style, for label writing, 235
Manufacturing a Miracle: Brooklyn and the Story of Penicillin, front-end interviews for, 251
"Many Ways to Say Thanks," Orselli blog, 41
Maryland Science Center, *Beyond Numbers* exhibition at, 158
McCarthy, Bernice, 75–76
McEver, Catherine, 102
McLean, Kathleen, 60, 102, 190, 209
measurement tools, in summative evaluation, 306–7; listening to visitor conversations, 306–7; open-ended, cued questionnaire, 307; visitors' photography, 307
Meeks, Freddie, *292*
Mendez, Rachael, 267
metaphors, 119
MHS. *See* Minnesota Historical Society
Miami Science Museum: bilingual interpretation guidelines, 110–11; bilingual labels at, *111*; *Heart Smart* multilingual audiences, 112–13
Microsoft Word, 92

Miedinger, Max, 271
Miles, Roger, 157
Minneapolis Institute of Art, *Restoring a Masterwork* project, 217
Minnesota Historical Society (MHS): AAM's Brooking prize Honorable Mention, 255; AASLH Award of Merit, 255; Alexander Ramsey House visitor panels, 253–55; front-end interviews, 254
misunderstandings, about visitors, 60–63
mock-ups: exhibits development and, 178, 245, 252; of interactive devices, 62, 261; of interactive exhibits, 195, 199, 259; paper products for, 259, 288, 301; testing texts through, 296; of *Wild Minds*, *258*
modalities, 161–65; individual visitors preference for, 162–63; limitations and drawbacks of, 163; types of, 161; virtual, nonreal, 164
Monterey Bay Aquarium, *124*; video use, 207
Monteza, Yolanda, 107
more-interested-visitor layering system, 157–58
multilingual audiences: lessons learned from, 112–13; Miami Science Museum's *Heart Smart*, 112–13
multilingual labels, 106–16; at Art Gallery of Toronto, 109; at Oakland Museum of California Art Gallery, *107*, 114–15; planning for, 107–9; translation process, 109–10
multiple intelligences theory, of Gardner, 70–71
multiple-method approaches, in summative evaluation, 304–6
Museum Experience (Falk and Dierking), 65–66
Museum Marketplace, 287
Museum of History and Industry, Seattle, *22*
Museum of Science and Industry, Chicago: floor plan, *42*; human body slices exhibit, 168–70, *169*; *Imaging Science* interactive exhibit, 195–96; shadow wall, *50*
Museum of Vision, San Francisco, *Animal Eyes* exhibition, *88*, 90, 154–55
"Museums: Agents for Public Education:" project, 312–13
Museum Texts: Communication Frameworks (Ravelli), 285

NAME. *See* National Association for Museum Exhibition
NAME listserv, 287
narrative walk-through, in label writing, 233
National Association for Museum Exhibition (NAME): *The Exhibitionist* journal of, 212, 287, 294, 300; regional workshops, 294
National Park Service, fiberglass embedment use by, 297
National Postal Museum, 156
National Science Foundation, 312
Natural History Museum in London, 63; *Human Biology* exhibition at, 157
Natural History Museum of Los Angeles. *See* Los Angeles Museum of Natural History
Nature Walk interactive exhibit, at Field Museum of Natural History, Chicago, *201*

Nelson, Karen G., 130–31
Nerve Speed Indicator, at Exploratorium, 261, *262*
newspaper journalism, 125
New York Hall of Science, *Evolution & Health* exhibit big idea, *10*, *11*
Nintendo, at Louvre, 220, 225–26
nonhierarchical exhibit experiences: interest level and, 148; learning styles, identities and audience segments for, 147–48
noninterpretive labels: credit panels, 31, 41; donor plaques, 31, 40–41; ID labels, 31, 39–41; types of, 31–32; wayfinding and regulatory signs, 31, *41*, 41–42, 224. *See also* interpretive labels
nonverbal stimuli, 80–81
number of words, 97–105; based on research, 97–98; DIA on, *99*, 103–4; Shedd Aquarium success story, 98–101; shorter, 101–4

Oakland Museum of California (OMCA): fonts used at, *271*; *Forces of Change*, 137; Gallery of Natural Sciences dead albatross display, 315–16, *316*; label writing guidelines, 235; talkback panels questions, 188, *189*; as visitor-friendly museum, 128–29, *129*; *You Are Here* digital interactive, 130–31
Oakland Museum of California Art Gallery, 44; "California People" section of, 130–31; multilingual labels at, *107*, 114–15
observation, of visitors, *77*
Occupational Safety and Health Agency (OSHA), 300
Old South Meeting House, in Boston, 308
OMCA. *See* Oakland Museum of California
Open Clip Art, 172
Open Conversations: Strategies for Professional Development in Museums, 312–13
open-ended, cued questionnaire, in summative evaluation, 307
open-ended exhibits, 83–84
open-ended questions, 186, *187*
Openlands Lakeshore Preserve, 140
Optima typeface, Zapf creation of, 270
orientation information, in exhibits, 33, 220, 224, 303; common issue, 310-11; with icons, 176; research findings, 327-28
orientation signs. *See* wayfinding and regulatory signs
Orselli, Paul, 41
OSHA. *See* Occupational Safety and Health Agency
Otters and Oil Don't Mix exhibition, at Shedd Aquarium, *162*
outdoor labels: cast metal, 298; desirable characteristics, 296; etched metal and engraved plastic, 298; fiberglass embedment, 297; HPL panels, 297; porcelain enamel, 297; PVC, 298; silkscreening for, 294
outdoor wayside panels, captions for, 38–39, *39*
Out In Chicago exhibit, at Chicago History Museum, *58*, 208

pace controlled or not controlled exhibition design, 78–79
Packer, Jan, 74
paper products, for mock-ups, 259, 288, 301
paragraphs: informative titles, 124–25; use of short, 118–19
participatory experiences, in museums, 141–42
The Participatory Museum (Simon), 141
Paying Attention: Visitors and Museum Exhibitions, 312
peer group exhibition design, 79–80
peers, writing for, 87, 90
Pekarik, Andrew, 72–73
Perry, Deborah, 127
Phipps Conservatory in Pittsburgh, poetry labels, *120*
photography, as measurement tool, 307
physical-action words, in interactive exhibits labels, 197–200
planning: for bilingual labels, 107–9; evaluating and, 167–71; exhibit design process, 149; for multilingual labels, 107–9; time, 152–53
Planning for People in Museum Exhibitions (McLean), 60
Plant Lab, at Huntington Conservatory, *93*, *162*, *289*
Plaza, Carlos, 110, 112–13
porcelain enamel, for outdoor labels, 297
Prehistoric Journey exhibition, at Denver Museum of Natural History, 157–58
Price, Merritt, 109
process: behind big idea, 11–12; bilingual labels design, 111, 114–16; exhibit design planning, 149; iterative, 171–72; labels editing, 94–95, 170, 239–43; multilingual labels translation process, 109–10
production and fabrication, of labels, 287–301; adhesives for, 288; backlit film, 275, 291–92; cast metal markers, 298; complex printing and lamination, 290–91; cut vinyl, 293–94; desktop publishing software and, 288; digital screens, 292–93; Duratrans, 275, 291–92; engraved plastic labels, 298; evaluation of, 300–301; flatbed or direct printing, 291, 292, 298; outdoor labels, 296–99; silkscreening, 294–96; simple printing, 288–90; sustainable exhibit materials, 299–300; vandal proof, 299
programs, digital interpretive devices for, 216
Proto Productions, 298
Psychology Today exhibition, 320–21, *321*
Psychology: Understanding Ourselves, Understanding Each Other, 320–21
Public Perspectives gallery, at Brooklyn Historical Society, 137
Pubols, Louise, 188
Punt, Barbara, 264

QR codes, 210–11
questions: Brevard Zoo in Florida use of, *179*; Chicago History Museum use of, *185*; Did You Know, on flip labels, 180–81; flip labels, 183–86; Indiana Children's Museum use of, *179*, 180; formative evaluation of interactive exhibits, 260–61; before testing label copy, 257–58; objects

used for flip labels, 185; on talkback panels, 187-89, *189*; open-ended, 186, *187*; typography, 270–75; visitors', 2; Why, 181–83
quotation use, at Denver Art Museum, 122
quotes, in italics, *277*

Race: Are We So Different? traveling exhibition, 28
Ramsey, Alexander, 253–55
Rand, Judy, 92, 103, 127, *315*; on label writing time, 235; on voice, 135
random access, to labels, 45
Ravelli, Louise J., 285
readability: of body copy, 283–84; sentence length and, 118, 284
reading level: aim for majority, 87; in children's museums, 90–92; rationale, 89–90; sixth-grade vocabulary and, 87; vocabulary levels guidelines, 92–96; write one-level labels, 87; writing for peers and, 87, 90
reading rails, at Utah Museum of Natural History, *101*
reading speed, normal, 276
Recovery Act Administrative Supplement grant, 112
recycled materials, 175, 300
Redmond-Jones, Beth, 89–90
regulatory signs, 42
remedial evaluation, 302–3
Renger-Patzsch, Albert, 240
Renner, Nancy, 89
research and evaluation, 327–30; on typography, 267–68; word numbers based on, 97–98. *See also* collaborative research studies
"Research in Museums: Coping with Complexity," 313
resonance, 70, 170, 191
"Respect the Rat" panel, at LAMNH, *133*
Restoring a Masterwork project, at Minneapolis Institute of Art, 217
restrooms, labels in, 150–51, *151*, 152
reviewers, for label writing, 241–42
Rice, Danielle, 246
Roberts, Lisa, 60, 140
Robertson, Annie, 254

sample sizes, for evaluations, 247–48
San Diego Natural History Museum, *Coast to Cactus in Southern California*, 89–90
San Francisco Museum of Modern Art, 141
sans serif typeface, 270–73, *272*
Sayre, Scott, 212; digital interpretive device lessons, 216–19
"Science Learning in Designed Settings" chapter, in Committee on Learning Science in Informal Settings, 313
Science Museum of Minnesota: BISE project, 309–10; *Water* exhibition summative evaluation, 308
science writing, label writing *versus*, 191
"Secrets of Circles at the San Jose Children's Museum" (Allen), 163
Secrets of Circles exhibit, at Children's Discovery Museum of San Jose, California, 108
section labels, 34, *35*; of *Darkened Waters: Profile of an Oil Spill* exhibition, 35
sequenced exhibition design, 78

serif typeface, 270–73
setting and context, labels interrelationship with, 125–26
74th American Exhibition, of Art Institute of Chicago, 66, *66*
Shaw, K. M., 63–64
Shedd Aquarium, Chicago: custom segmentation, 73–74; flip label, *100*; *Otters and Oil Don't Mix* exhibition, *162*; word number success story, 98–101
Shettel, Harris, 305
Signs, Trails, and Wayside Exhibits, 287
silkscreening, 294–96; on Formica surfaces, 296; one-of-a-kind labels, 295; for outdoor labels, 294; on Plexiglas, 295
Simon, Nina, 80, 141
simple printing, 288–90
SK Partners LLC, 314
smartphone, 209–11
Smithsonian Institution's Office of Policy and Analysis, IPOP visitor typologies, 72–73
Society of Environmental Graphic Designers, 287
software: Adobe Creative Suite graphics, 290; computer graphics, 290; desktop publishing, 288
El Solitario George, at Darwin Research Center, *114*
Sound Studio, at CLO, 318
Spanish translations, at OMCA Art Gallery, 110
specialty museums, 57–59
spoken labels, digital interpretive devices and, 207–8
Stevens, Jason Jay, 212, 213–15
stories, interpretive labels meaningful, 24–28
storytelling: Cron on, 23; interpretive labels as, 22–25
Studebaker Museum, 59
Style: Ten Lessons in Clarity and Grace (Williams), 24
summative evaluations, 18, 158, 247, 264–65; budget for, 303; collaborative studies, 309–14, *315*, 318; of *Darkened Waters: Profile of an Oil Spill*, 305–6; effective and award winning, 320–21; *of Global Warming* exhibition, of AMNH, 308; of *Man in His Environment*, at Field Museum, 305; measurement tools, 306–7; multiple-method approaches, 304–6; of Old South Meeting House in Boston, 308; for remediation, 302–3; seasonal and multisite audience comparisons, 307–8; *Water* exhibition, of Science Museum of Minnesota, 308
summative studies, effectiveness, 315–22; CLO Sound Studio, 318–19, *320*; *Dena'ina* exhibition, at Anchorage Museum, 317, *318*; DIA, 317–18; live termites exhibit, 316–17, *317*; OMCA Gallery of Natural Sciences dead albatross display, 315–16, *316*
surveys: exit, 304; visitor, 59
sustainable exhibit materials, 299–300
sweep rate, 150–51; Sweep Rate Index, 312

talkback panels questions, 187–89
Tate Museum, 71–72
Taylor, Samuel, 264

termites exhibit, summative study effectiveness, 316–17, *317*
testing: of digital interpretive devices, 212, 218; in formative evaluations, 262–64; of interactive labels, in formative evaluation, 259–62; of label copy, in formative evaluation, 256–59; of texts, through mock-ups, 296; of text vocabulary levels, 92–93
texts: Coleman-Liau and Bormuth formulas, 92; columns of, 279–80, *280*; Flesch-Kincaid formula, 92; meaning and, 285; Microsoft Word, 92; mock-ups testing of, 296; testing vocabulary levels for, 92–93; vocabulary levels test of, 92–93
Tilden, Freeman, 20–21
time: exhibit experiences defined by, 150–53; label writing schedule, 235–36; of stay, visitors average, 150–51
time metrics: average time of stay, 150–51; sweep rate, 150–51; time-budget planning, 152–53
title labels, 32, *104*
titles: informative paragraph, 124–25; typefaces for, 278
topics, big ideas compared to, 9–10
translations: *Dena'ina* exhibit, at Anchorage Museum, 108–9; Exploratorium digital, 108, *109*; multilingual labels process, 109–10; Spanish and Chinese, at OMCA Art Gallery, 110
traveling exhibits: *Animal Eyes*, at San Francisco Museum of Vision, *88*, 90, 154–55; panels for, 115; *Race: Are We So Different?*, 28
Try It! Improving Exhibits Through Evaluation (Taylor), 264
two-column set up, for label writing, *237*
type design, *284*, 284–85; mixing typefaces and, 281–82
type designer, Licko as, 270
typefaces: Hoefler & Company creation of, 267–68; mixing, type design and, 281–82; sans serif, *268*, 270–73, *272*; serif, 270–73; Smithsonian's typeface creation for Cooper Hewitt, 268; for titles and headlines, 278; Whitney Museum of American Art for, 267–68; Zapf creation of Optima, 270
type size, of captions, 275
typographic design, 266–86; body copy legibility, 269–71; body copy readability, 283–84; digital devices in gallery, 282–83; letters on fovea, 276–78; line length and layout, 279; mixing typefaces and type design, 281–82; museum texts and meaning, 285; one column, two columns, 279–80, *280*; type design, 281–82, *284*, 284–85; typefaces for titles and headlines, 278
typography: ADA on contrast in, 274; common questions about, 270–75; consistency of, 148–49; language and fundamentals of, 267–69; legibility, 3; researchers on, 267–68
typography questions: black on white or white on black, 274; bold face or regular, 273; serif or sans serif, *268*, 270–73, *272*; type size, 275
typologies: IPOP visitor, 72–73; of visitor motivations, 69–74; of visitors, 59–60

Ukrainian Museum, 59
universal human concerns, of visitors, 52–54
University of Chicago, 137
University of Pittsburgh Center for Out-of-School Learning, BISE project, 309–10
unsequenced exhibition design, 78
User-Friendly: Hands-On Exhibits That Work (Kennedy), 264
USS *Constitution* Museum, *All Hands on Deck* interactive exhibit, 132, *198*, 198–99
Utah Museum of Natural History: "Life" exhibit, 200, *201*; reading rails, *101*

vandal resistant, 299
Veverka, John, 21
vicarious watching, 80
Victoria and Albert Museum, types of labels, 44; label-writing guidelines, 235
videos: as section labels at Chicago History Museum, 208; digital frames in *Dena'ina* exhibit, at Anchorage Museum use of, 208; "dining table" at DIA, 208; Monterey Bay Aquarium use of, 207
vinyl-cutting machines, 294
virtual, nonreal modalities, 164
visitor-friendly labels, 117–34; visitor-oriented institution and, 127–29, 132–34
visitor-friendly labels guidelines, 118–27; alliteration, 119–20; content justification, 124; exclamation points, 121; exhibit setting and context, 118; expectation of visitors reading, 122; flexibility, 125; Haiku poetry, 120, *120*; informative paragraph titles, 124–25; labels and settings interrelations, 125–26; metaphors, 119; newspaper journalism, 125; quotations use, 121–22; sentence length variation, 118; short paragraph use, 118–19; snappy ending, 126–27; sparing humor use, 121
visitor-friendly museums: DIA, 33 *34*, *38*, 74–75, *99*, 103–4, 127–29, 132, 208, 235, 317–18; LAMNH, *88*, 132, *133*, *175*, *211*; OMCA, 128–29, 128–31, *129*, 137, 188, *189*, 235, *271*, 315–16, *316*; USS *Constitution* Museum, 132, *198*, 198–99
visitor identities, of Falk, 71
visitor motivations: DIA on, 74–75; Packer on, 74; typologies of, 69–74
visitor-oriented institution: characteristics of, 127–28; examples of, 128–29, 132–34; visitor-friendly labels and, 127–29, 132–34
visitors: AMNH, 55–57; average time of stay, 150–51; children as, 51; commercial user-testing lab on, 215; demographic and behavioral similarities, 49–52; dislikes of, 65; engaging and empowering, 217; exhibits life from, 66–67; knowledge of, 2; labels annotation, through digital devices, 227–28; listening to conversations of, 306–7; misunderstandings about, 60–63; modalities preferences, 162–63; museum observation of,

77; photography, as measurement tool, 307; questions, 2; to specialty museums, 57–59; surveys, 59; thinking inclusively about, 63; typologies, 59–60; universal human concerns, 52–54; wants of, 63–65; whole-body interactives, *50*
"Visitor's Bill of Rights" (Rand), 127
visitor fragmentation, 69–85;; Falk's visitor identities, 71; Field Museum of Natural History five visitor types, 72; Gardner's multiple intelligence theory, 70–71; learning styles, 75–76; motivations for experiences, 74–75; Pekarik's IPOP, 72–73; Shedd's custom segmentation, 73–74; Tate's eight segments, 71–72
Visitor Studies Association (VSA), 244, 245, 312
vocabulary: of labels, 2; sixth-grade, 87
vocabulary levels guidelines, 92–96; core editing, 94–95; front-end evaluation use, 93–94; test of text, 92–93
voice, 135–43; beware of too much "you," 142; Brookfield Zoo's *Voices of the Forest* exhibition, 137, *138*; in *Darkened Waters: Profile of an Oil Spill*, 136; of exhibits, 15, 60; invite participation, 141–42; no voice, 142; points of view identification, 137; Rand on, 135; of specific individual, 136
Voices of the Forest exhibition, at Brookfield Zoo, 137, *138*
Vourlas, Rachel, 288
VSA. *See* Visitor Studies Association

Water exhibition, of Science Museum of Minnesota, 308
wayfinding and regulatory signs, 31, *41*, 41–42; at Brookfield Zoo, *41*, 176; digital devices for, 224; floor plans, *42*
Wells, Marcella, 21
What Makes Learning Fun (Perry), 127
Whitney, Katherine, 154–55
Whitney Museum of American Art, typeface creation for, 267–68
Whodunit? The Science of Solving Crime exhibition, at FWMSH, 102–3
whole-body interactives, *50*
Why questions, 181–83
Wikimedia, 172
Williams, Joseph M., 24–25
W. K. Kellogg Foundation, "Museums: Agents for Public Education" project, 312–13
wordless labels, digital interpretive devices and, 207–8
World War II Veterans Museum, 59
"Write and Design with the Family in Mind" (Rand), 92
writing for peers, 87, 90
Wynn, Toni, 238

You Are Here digital interactive, at OMCA, 130–31

Zapf, Hermann, 270

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