6

Studying visitors

in: George Hein, Learning in the Museum
(Routledge, 1998), 100-134.

> *But the crucial question [about any logic of research] concerns, not the intrinsic virtues of the reconstructed logic taken in itself, but rather its usefulness in illuminating logic-in-use. There is a story of a drunkard searching under a lamp for his house key, which he dropped some distance away. Asked why he didn't look where he dropped it, he replied, "It's lighter here!" Much effort, not only in the logic of behavioral science, but in behavioral science itself, is vitiated, in my opinion, by the principle of* the drunkard's search.
>
> (Kaplan 1964: 11)
>
> *The drunkard's search is relevant here; the pattern of search, we feel, should be closely related to the probability of the thing sought being in the place where the seeker is looking. But the joke may be on us. It may be sensible to look first in an unlikely place just because "it's light there" . . . The optimal pattern of search does not simply mirror the pattern of probability density of what we seek.*
>
> (Kaplan 1964: 17–18)

Introduction

Kaplan's imaginative interpretation of the familiar story of the drunkard looking for his keys reminds us that what is considered appropriate methodology depends on our perspective. What method is most likely to give valid and reliable data? This is not a simple technical question but a profound one and, like all profound questions, the answer is not simple, it depends on other components of our belief system – it depends on our world view.

In this chapter, I will examine the broad spectrum of methods that have been used for visitor studies, describe examples of each, illustrate the kind of information we can obtain about museum visitors from them, and indicate how they match with different approaches to research and evaluation.

Visitor studies are carried out because we are interested in finding out what visitors think and how they feel about their visits. The actual empirical work

of visitor studies has to be limited to a study of human *behavior* (including speech). No matter how much we wish to ascribe meaning to this behavior, and no matter how much we may believe that the significant action takes place in the mind, we must still begin with what people actually *do* and *say*. Whether more quantitatively or qualitatively inclined, all researchers and evaluators are limited by what they can actually "see" (or "hear" or "feel") about others, and the only attributes that are directly available to us are people's behavior, or changes in that behavior.

Differences in the attitude toward that observable behavior distinguish the various research paradigms. On the whole, quantitative researchers are more likely to analyze and classify the behavior itself. They use concepts and language that remain closely related to observed behavior and generalize about levels of behavior. Thus, they are likely to focus on those properties that can be quantified, carefully defined, and used to generalize.

Advocates of behaviorism avoid terms that cannot be directly translated into behavioral characteristics. Thus, the research uses action verbs, with the implicit assumption that each term corresponds to observable behavior. Educators have tried to follow guidelines such as those developed by Mager (1975) in planning educational objectives. Unfortunately, as generations of proponents and critics alike have noted, meaning is complex and one person's observable, objective behavior turns out to be another person's assumption about an unobservable state of mind.

Naturalistic researchers, in contrast, are interested in the meaning behind a behavior and in explanations that provide a description of the behavior within a theoretical scheme. They do not limit themselves to schemes where all the components can be linked to the same causal chain. Consequently, qualitative researchers are more likely to cast a wide net in looking at behavior, to examine activities that may not be easily quantified or totally specified, but which they believe can provide some insight into the meaning a subject makes of his or her experience.

Considered as a whole, the range of methods available to look at human activity is as wide as human ingenuity will allow; that is, it encompasses a broad range of tools, probes, and indicators for recording what people do.

All methods fall into three broad categories:

- observing what people do;
- taking advantage of the amazing human property of speech – either talking with people about their activity or asking them to write about it;
- examining some product of human activity. For example, an early review of visitor studies is called "Noseprints on the Glass" (Anderson 1968, quoting Webb *et al.* 1966).

Each of these broad categories will be described and illustrated in turn.

Observation methods

Tracking and timing

Robinson and Melton's work, discussed previously (see pp. 47–9), provides the pioneering studies of how to observe visitors in museums. They began the tradition of *spatial tracking*, recording the movement of visitors on a rough floor plan of a gallery. This procedure has been carried out thousands of times since. Figure 6.1 is an example of a visitor route through a gallery from Melton's work. A more recent visitor tracking data sheet from an evaluation of an exhibition at Boston's Museum of Science, Figure 6.2, shows the selective way a family group viewed an exhibition.

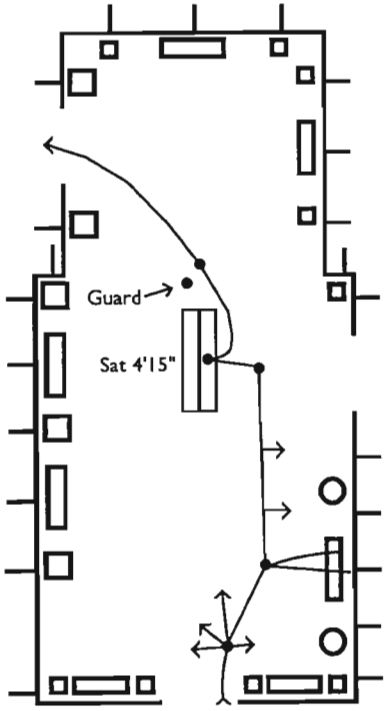
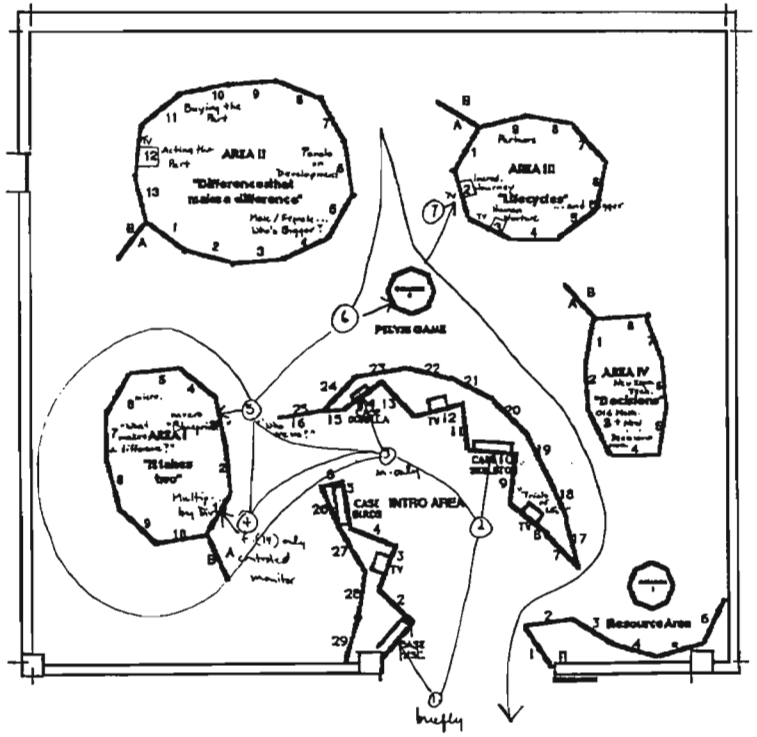


Figure 6.1 Melton's tracking figure: the routing card record of the behavior of a visitor in the French Gallery. *Source*: After Melton 1935/1988. Reprinted with permission from *Problems of Installation in Museums of Art* by Arthur W. Melton. Copyright 1935, 1988, 1996 by the American Association of Museums. All rights reserved.

Observer: Maureen Date: 1/29/91 Time In: 3:17
Time Out: 3:25
Exhibit : Two of Every Kind Total Time: 8 min.

Sex: M F (Mix) Age: < 6 (7-10) (11-14) 15-18 19-24 (25-32) (33-45) > 45

Group Size: 5 Group Type: (Kids) (Adults) Mixed Ages: _____



(5) youngest f. (7) wanted to view micro, so all stopped

6. m. touched pelvic bones, while f. (33-45) liked. at some displays but watched "Incred. Journ fr. same spot. (2 min.) (7)

Figure 6.2 Museum of Science tracking, *Two of Every Sort*

Traditional tracking Tracking studies, the backbone of many museum visitor studies for decades, established that visitors follow individual paths, that most visitors spend very little time in front of individual objects, that almost all visitors stop at only a fraction of objects on display, and that after about 15–20 minutes of viewing, all but the most dedicated visitors become fatigued and stop less frequently or terminate their visits.

A variety of metaphors have been used to describe visitors' paths through exhibitions. The earliest known observation of visitors in a museum (Higgins 1884: 186) categorized visitors as:

- students (i.e. serious visitors) 1–2 per cent;
- observers, about 78 percent;
- loungers, including children, about 20 per cent;
- emigrants (no number given).

Wolf and Tymitz (1978b: 10–11) categorize visitors as:

- the commuter – the person who merely uses the hall as a vehicle to get from the entry point to the exit point;
- the nomad – the casual visitor;
- the cafeteria type – the interested visitor who treats the entire museum like a cafeteria as he or she searches for objects or exhibitions of interest;
- the VIP – very interested person.

Falk (1982: 12) used the metaphor of the department store to categorize visitors. He classified them as

- serious shoppers – who come to the museum with a clear, predetermined notion of what they want to see;
- window shoppers – people who have come "to do" the museum, and who can turn into the next group;
- impulse shoppers – visitors who discover one or more exhibits sufficiently interesting to them and become more engaged with exhibits than they had planned.

Bicknell and Mann (1993) have suggested the following four categories

> The "buffs" – the experts who know the location of every rivet on the Spitfire. They are often male, usually adult, often solitary visitors . . .
>
> "It's for the children" – usually families with children of ages four to fourteen, who implicitly or explicitly are a "learning unit." . . .
>
> "I'm museuming" – often couples, often tourists, often older. Culture-vultures who know the international museum code, they tend to systematically work their way through the museum.
>
> School visits – in the UK these group visits are usually related to the national curriculum and range in age from five to seventeen.
>
> (Bicknell and Mann 1993: 94)

A French tracking study in a natural history museum (Veron and Lavasseur 1989) classified visitors into the following categories:

- ants, who moved methodically from object to object;
- butterflies, who moved back and forth among the exhibits, alighting on some displays;
- grasshoppers, who chose specific objects and "hopped" from one to another;
- fish, who glided in and out of the exhibition with few stops.

The common characteristic of all these attempts to categorize visitors by observing their paths through exhibitions is that exhibition visitation is a highly individual activity.

Some visitors arrive at a gallery, take one quick look around and then leave. Evaluators sometimes leave out these groups and only track or time those visitors who stay longer than 30 seconds. The extent to which this in-and-out behavior is characteristic of all museum visits is open to debate. It is frequent in large museums with many galleries from which to chose. Large museums also are the venues for almost all published visitor studies. Small museums, which constitute the bulk of the world's museums – although not the majority of museum visits – may have different visitor tracking patterns. When there is only one gallery or one setting and the museum or historic site is removed from a city center, in-and-out visitors are less likely.

Some observers restrict observations to single visitors, obviously the easiest to track, but unfortunately only a small minority of visitors. Others track visiting groups as one unit, or track one member of a visiting group. On the whole, "family" groups, i.e. groups of approximately 2–5 people who come to a museum as a unit and not part of a larger group such as a school class or an organized tour, tend to stay together and move through galleries roughly as a unit.

Classifying visitors into categories is characteristic of methods that focus on generalizing and providing quantitative, comparable data. If the focus is on providing access to each visitor, such classifications may be less useful than detailed descriptions of individual paths, or the behavior of small groups. The Higgins (1884) study mentioned previously (p. 42) provided a powerful example of a category of visitor which did not otherwise fit the general pattern. Individuals who follow idiosyncratic paths for personal meaning making are observed frequently. In our small sample of visitors who were asked to "think aloud" at Boston's Museum of Science, we found one who toured an exhibit labeled "Cells" was focused on finding information about AIDS. An art teacher guiding a group of college-age, art education majors to the Museum of Fine Arts noted one who refused to enter a gallery of nineteenth-century portraits; she was overwhelmed by memories of a frightening childhood experience when she was required to sleep in a room full of such faces. My own visits to museums often include limited paths that lead to a favorite painting or object, and ignore most of the museum's content.

Visitor time in galleries Besides providing evidence for visitors' actual paths through a museum and through individual galleries, tracking studies also provide information on the time visitors spend in a museum. One early distinction derived from this work, and still used, is the definition of the *attracting power* and *holding power* of an individual exhibit item, a set of exhibits, or an entire museum.

Figure 6.3 from Melton's early work, shows a typical plot of visitor time in a gallery. As indicated earlier, the time scale is not long. Tracking studies give quantitative data and lend themselves to statistical analysis of various sorts. A common characteristic, recorded in many studies, is *average* visitor time in a gallery. This information is useful to compare the results of a change in a gallery – for example, whether people, on average, stay longer if labels are altered, exhibits are rearranged, or other modifications are made. But the valid statistical manipulations possible from this data are limited because, as most researchers recognize, the distribution of visitors over time is not symmetrical; it does not follow a normal distribution. Some have argued that visitor time in a gallery can be described by a bimodal distribution, with a set of short-time visitors and another set of long-time visitors, corresponding to the "uninterested" and the more "interested" visitors, to use Melton's terminology (Melton 1935/1988: 16). Although some data does appear to approximate this pattern, the fit to a bimodal distribution usually is only approximate at best. More commonly, visitor time drops off quite rapidly, and a small, decreasing percentage of visitors remain for longer periods. This can be neatly represented by "visitor survival" curves which plot the fraction of visitors remaining after a given time. Menninger (1990) was among the first to present data in this form and they have

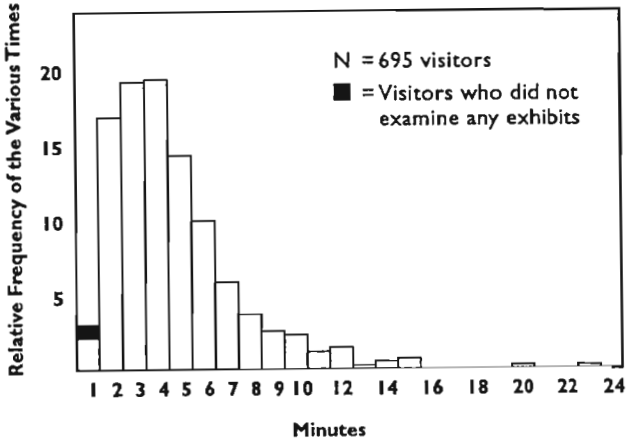


Figure 6.3 Time spent in the gallery
Source: After Melton 1935/1988.

been used extensively by Bicknell (Bicknell and Mann 1993, Bicknell 1995). Some typical visitor survival curves are illustrated in Figure 6.4. Visitor survival curves can be used to calculate a visitor "half-life": the time when half the visitors have left the gallery. Half-lives ranging from a few minutes to almost forty minutes are illustrated in Figure 6.4.

Serrell (1993) has summarized a large number of tracking and timing studies in support of her proposal that a "successful" exhibition be defined as one in which:

- Visitors move through the exhibition at a rate of less than 3,000 sq. ft. per minute.
- 51 per cent of the visitors stop to attend at least 51 per cent of the exhibits.
- Visitors can correctly quote or recall specific facts, attitudes or concepts related to the exhibition elements or the exhibition's objectives.

More recently Serrell (1995) has further quantified the first element to specify that 51 per cent of visitors move at or below this rate and has modified the third element to read

> Can 51% of a random sample of cued visitors, immediately after viewing the exhibition, express general and specific attitudes or concepts that are related to the exhibition's objectives?
>
> (Serrell 1995: 8)

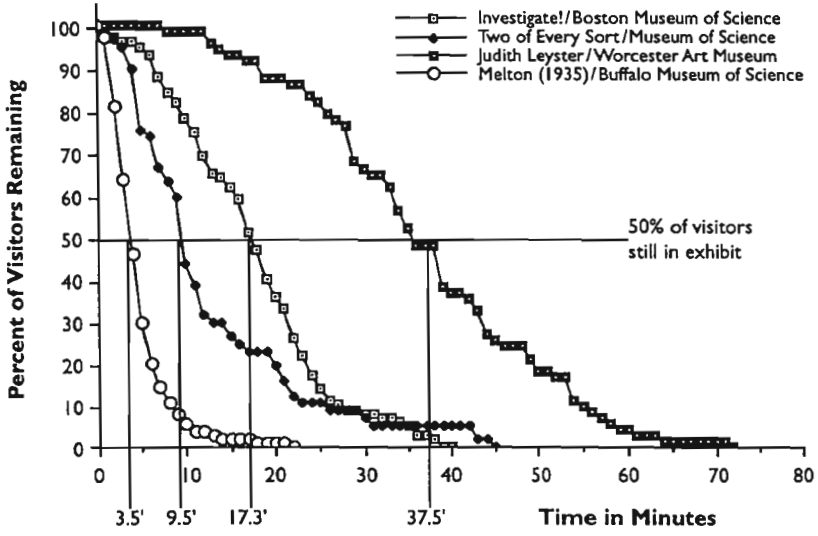


Figure 6.4 Comparative visitor decay curves

Unlike the first two elements of "success" this third one requires interviews; it cannot be determined from tracking data alone.

Tracking studies show that these apparently rather modest goals, are, in fact, seldom met. Summarizing data from 48 studies in 30 different museums – including science, natural history, cultural history and art museums – Serrell finds that the "per cent of use" (average number of exhibition components at which visitors stop for longer than 2 seconds) ranges from 2 to 79 per cent, with only five of the 48 studies reflecting her 51 per cent criterion. Whether her criteria are appropriate for all exhibitions has been challenged (Shettel 1995).

Time in a gallery can, of course, be recorded much more simply by noting beginning and ending time; it does not require tracking. The time visitors spend in an exhibition provides the single most useful, most widely recorded, easily obtained visitor behavior. But a note of caution is also required. While time is a necessary condition for learning, time in a gallery does not correspond directly to time spent attending to exhibitions. People may spend more time in a room with sofas, as compared to another gallery without that amenity, but not spend more time interacting with exhibits.

Naturalistic observations Observing visitors and noting their behavior as a primary means of visitor studies received additional impetus from a series of studies carried out by Laetsch and his students (Laetsch *et al.* 1980) when he served as director of the Lawrence Hall of Science in Berkeley, California. This group instituted a series of "naturalistic" observational studies of visitors based on ethnographic observations from Laetsch's background in biology. Families, school groups, and other visitors were observed in zoos, science museums, and similar venues. An important characteristic of this work is that the visitors were observed for an entire visit, not only in an individual gallery. Laetsch's group and others since (see Dierking and Falk 1994) concluded that an average museum visit is approximately two hours long, is very much a family social event, and that only approximately one-quarter to one-half of the time – about 30 minutes to one hour – is spent at the exhibits. The rest of the time is devoted to orientation and activities such as shopping at the museum store, eating, and using the toilets. As Falk and Dierking (1992) also emphasize, a museum visit is more than time spent in viewing exhibitions; it is an experience that can be understood only by considering the entire environment – personal, social and physical – in which it takes place.

The more qualitative approach to observation was also championed by the work of Robert Wolf and Barbara Tymitz in the late 1970s and early 1980s. They carried out a series of qualitative, naturalistic studies in which the data were summarized in narrative form. They describe their method as follows:

> This study was conducted by employing what we have referred to as naturalistic/responsive methodology . . . We have taken the exhibit as a complex set of stimuli. The complexity of the exhibit relates not only to the artifacts and concepts implicit in its design, but also the assumptions, expectations and philosophical differences that exist among

> curators, the design persons, and the administrators . . . We have treated this study as anthropologists would treat early visits to a new culture.
> (Wolf and Tymitz 1978b: 2)

Structured observations Some studies use forms coded for predetermined behaviors to assist in recording data on visitor behavior. An observational study conducted at National Museums and Galleries at Merseyside provides an example of such a form (Sudbury and Russell 1995). The expected behaviors of interest to the evaluators are listed down the left-hand column and then, when noted, are recorded at various time intervals in the boxes provided (see Figure 6.5).

Event-based observation Traditional, experimental-design tracking studies, as well as many ethnographic observations of visitors, are usually designed to consider the visitor action spatially and temporally. They start with a delineation of space, usually with a floor plan as a guide for the field worker, and record the visitors' movements through this space. Both naturalistic and traditional studies,

Date	Time	Target Visitor Number	Male or Female	Age	Or over	Collector's Name
					30 40 50 60	
TIME TAKEN						
EXHIBIT NUMBER NAME						
Observed Actions	Tick Appropriate Column					
Helper present in view						
Interacts after help						
Engages with label						
Touches apparatus						
Moves part of apparatus						
Works alone						
Works with others						
Talks with others						
Watches others						
Questions helper						
Questions others						
Repeats action						
Has to queue or wait						

Figure 6.5 Liverpool observation form
Source: After the Observational Checklist in Sudbury and Russell 1995.

whether or not they use a floor plan, often use time as the anchor. A field worker records what the visitor is doing after set time intervals or otherwise links the observed behavior with the passage of time.

Another way to carry out observational studies of visitors in museums is to focus on *events*. Visitors are observed as they move through an exhibition, with a change in activity triggering a new observational mark, independent of time. A good example of such an observational study is work carried out by Hilke (1989) at the National Museum of Natural History at the Smithsonian Institution. She developed a set of categories to describe family visitor behavior. Her scheme called for coding a family visit by "actions undertaken by the family." It listed these by the following categories:

- the agent, the family member primarily engaged in the action;
- a description of the event using a set of predetermined codes;
- the topic/content of the action, whether it involved the exhibit or another group member; and
- the social content of the event, whether it was performed alone or with another visitor group member.

A sample "transcript" of the coded observation form is provided in Figure 6.6 (Hilke 1988). "Action Events," including 45 different possibilities, are listed in Figure 6.7 (Hilke 1989). Hilke's formal approach to observations permits detailed correlation of observed activities and specified visitor attributes. Such elaborate forms usually sacrifice the ability to note unexpected behaviors.

Experience sampling

To assist his effort to "measure the quality of subjective experience" that eventually evolved into a description of the "flow" experience, Csikszentmihalyi (1990) developed the Experience Sampling Method and later applied it to museum visitors.

> This technique . . . involves asking people to wear an electronic paging device for a week and to write down how they feel and what they are thinking about whenever the pager signals.
>
> (Csikszentmihalyi 1990: 4)

Visual tools for observation

A range of photographic methods can be used to assist observation. As indicated in a previous chapter, one of the first visitor studies (Gilman 1916) used photographs to illustrate how difficult it was for a visitor to examine objects in a museum that used floor-to-ceiling cases and very wide table top cases to display objects.

Time lapse photography provides a method for presenting striking evidence to museum staff of visitor behavior in a gallery. By mounting a camera in a strategic corner and taking individual frames at set times and then playing back

Sample transcript: A young girl enters an exhibit hall with her family

Line	*Agent*	*Action-Event*	*Topic/Content*	*Social Context*
1	girl	go to	static exhibit	alone
2	girl	look intently	static exhibit	family
3	girl	look text	static exhibit	mother
4	girl	ask name of	static exhibit	mother
5	mother	respond w/name	static exhibit	girl
6	mother	ask to show	static exhibit	girl
7	girl	respond/show	static exhibit	mother
8	girl	leave	static exhibit	alone
9	girl	go to	static exhibit	alone
10	girl	look intently	static exhibit	alone
11	girl	ask to come	static exhibit	boy
12	girl	does not respond	static exhibit	girl
13	girl	go to	mother	alone
14	girl	state neg. evaluation	boy	mother
15	mother	does not respond	boy	girl
16	girl	go to	static exhibit	mother

Figure 6.6 Hilke transcript
Source: After Hilke 1988.
Note: During observation of a family visitor every action undertaken was recorded on a separate line as a sequence of four two-digit numbers reflecting who (agent) did what (action–event) about what (topic/content) to or with whom (social context). A new behavioral line was recorded any time one or more of its component numbers changed, or after 15 seconds, whichever came first. This table provides an English translation for a sample of the behaviors recorded.

the film as a movie, a powerful sense of how a space is used can be produced. The first use of this technique appears to have been Nielsen's (1942) study of visitors at the Chicago Museum of Science and Industry. He mounted a camera unobtrusively in a corner, had it set to take a picture once every 5–15 seconds, and analyzed the resulting film. He concluded that "the analyses . . . corroborated subjective impressions that visitors were not seeing the exhibit [on magnetism] in proper sequence" (Nielsen 1942: 109).[1]

Van der Stoep (1989) discusses the use of time lapse photography to monitor the way visitors interact with outdoor monuments.

Film and video can also be used to facilitate observation. The advantage over direct observation is that researchers can analyze film at their leisure and solicit different observers' insights. They can also examine the same behavior repeatedly in an effort to understand it. Falk (1983) used film to record visitor times of children at a science exhibition and correlated time spent with the results from a multiple choice test given the children after their visit. Students who

Action-Events Making up the Observational Code
(A) Action-Events Which Are Considered Learning-Related

Pure Info

	Learn first hand or fact-oriented	*Learn second-hand or interpretive*
COOPERATIVE	Ask to verify 11,0	Ask to describe 2,0
	Verify 4,0	Describe 54,0
	Verify resp 162,25	Describe resp 39,0
	Ask to deny 1,0	Read aloud 64,1
	Deny 0,0	Ask what someone thinks 7,0
	Deny response 39,6	Ask interpret 1,0
	Ask inform 189,23	Interpret 75,0
	Inform 231,29	Interpret resp 39,0
	Inform resp 138,18	Ask explain 35,2
	Ask name of 105,0	Explain 39,2
	Name 77,0	Explain resp 42,1
	Name response 72,2	Ask for analogy 2,0
	Ask to show 19,9	Make analogy 18,0
	Show 215,5	Analogy resp 3,0
	Show response 140,3	Verbal cooperation 59,15
	Ask minimum 3,0	Show how 20,0
	Say minimum 8,0	
	Min response 50,1	
	Say don't know 21,0	
	Repeat 41,1	
	Correct 28,2	
PERSONAL	Touch 94,6	Look graphics 241,9
	Move-on-look 159,35	Listen 17,1
	Gaze at 495,172	Listen intently 0,0
	Look intently 49,2	
	Manipulate 42,12	

Figure 6.7 Hilke categories
Source: After Hilke 1989.
Note: The number pair adjacent to each entry reflects the absolute frequency with which the action-event was observed for exhibit and non-exhibit contexts, respectively. The total number of action-events observed (N) was equal to 5996.

spent significantly longer times appeared to learn more about the exhibition. Loomis (1987: 221) and Morrissey (1991) describe other examples of the use of film and video.

An interesting application of video to observe visitors is the use of security film to capture visitor reactions to an exhibit. In the course of a study of what visitors learned from exhibition objects, staff at Herbert Art Gallery and Museum, Coventry, noted that a security video camera trained on a precious

object also recorded visitors at an exhibit in front of the "Build a Clock" exhibit in the "Godiva City Gallery" (Buckley 1995). They began to look at the film and observed that people usually worked on the construction in groups, were sometimes frustrated if the model clock had been put together by previous visitors, and sometimes left the exhibit and came back to view it or work on it.

Lachapelle (1994) provided visitors with simple video cameras and, for research purposes, asked them to visually record their visit and, simultaneously, orally record their comments. He suggests that informant-made videos provide a basis for multiple methods of data analysis – tracking, discourse analysis, study of gestures and physical relationships – using one single primary source of information.

> Contrary to other means of data collection, informant-made videos provide visual documentation of the work of art to which the informant is responding. This makes the informant-made video recording a complete and coherent body of data. With the exception of biographical information about the informant, no other source of data is required to make sense of the recording. The investigator is not dependent on her or his memory of the session in question in order to interpret the informants' comments about specific aspects of the works of art.
> (Lachapelle 1994: 241)

Other observation methods

Methods for observing the interaction of visitors and museums are limited only by the ingenuity of the observer. The influential book *Unobtrusive Measures* (Webb *et al.* 1966) cites as its first example the observation at the Chicago Museum of Science and Industry that the floor tiles surrounding the chick hatching exhibit became worn out and had to be replaced every few weeks, while floor tiles in other areas of the museum lasted for years.

The rate at which interactive exhibits break down, the use or non-use of explanatory pamphlets, the amount of litter in some areas, questions asked of guards, all can become significant data for evaluation studies. In order to use such unobtrusive measures it's important to:

- make policy decisions about why data are being collected;
- collect data systematically;
- develop an accurate and consistent recording system;
- decide on an analytic scheme for handling the data.

The application of a systematic structure for recording and analyzing data converts anecdotal, informal, and subjective information into acceptable social science methodology. There is no secret recipe for developing observation protocols or for deciding what result of visitor interaction with an exhibition "should" be observed and noted. Good social science practice consists of providing systematic structure to the observation and recording of human behavior, whether this is done within the framework of experimental-design

models or naturalistic ones. Using methods previously employed by others has the benefit that some problems, especially technical ones, may have been addressed. But every evaluation study has its unique limitations as well as opportunities. Valid and reliable data comes in many forms, but it must always be collected and analyzed using some systematic, rigorous framework.

Observing visitors is a stimulating and remarkably informative method museum education staff can employ to improve their own practice and to understand their visitors better. Tracking is relatively easy to learn and even less formal observations of few visitors can be enlightening. It can be shocking to find that visitors routinely ignore your favorite object, repeatedly miss a special label, or expend enormous energy using an interactive exhibit in a way that, to you, does not appear to be particularly fruitful!

Language-based methods

Concerns about the "subjectivity" of respondents, inability to develop reproducible data, or doubts about their capability to be reflective have prompted some researchers to reject the most human of all qualities, our ability to speak and to reflect on our activities, as a research tool. I discussed Melton's comments about interviews previously. Higgins also doubted that many visitors could reflect on their experience:

> it became obvious that the visitors conversationally approachable were but as the scattered taller flowers amidst the innumerable culms of grass in a meadow.
>
> (Higgins 1884: 185)

And Murray, another early observer of museum visitors (Murray 1932), noted that visitors could not tell him anything about what they had learned and only commented that the exhibits were "interesting." He, too, opted for observational data exclusively.

Others have either used the standardizing methods of modern sociology and psychology to develop questionnaires and interview forms that provide "objective" data or have adapted the more in-depth interview methods of clinical psychology and field work to try to gain insight into visitors' responses to the museum and its exhibitions.

Questionnaires or surveys

The most common response from museum personnel when faced with the need to carry out a visitor study is to generate a "survey." Often what they mean is a type of interview; staff develop a set of written questions, but visitors are approached and asked to respond orally. When the total visitor population sampled is in the range of fifty or less, this method is probably the most efficient means of finding out what people have to say on any subject. If in-depth responses are expected, interviews are also much preferable to questionnaires.

On the other hand, if larger samples are to be surveyed or if quite specific answers (checking a box, making one choice out of several, or answering true or false) are expected, then written answers from respondents are more likely to be appropriate and are certainly more cost effective. In this chapter I will call anything that requires a verbal response from a visitor an interview, and any instrument that requires a written response from the visitor a questionnaire.

Questionnaire advantages and disadvantages The most direct, simple way to obtain reproducible data from subjects is to develop, test, and administer a survey or questionnaire. Among the many advantages of a questionnaire are:

- Once questions have been developed and field tested they don't change. Answers obtained at different times or under different circumstances are still responses to the same prompt and can be combined for analysis.
- A direct person-to-person encounter for the length of time it takes to fill out a questionnaire is not required with a subject. Questionnaires can be mailed back, mailed out (or both), or otherwise distributed in a variety of settings. Even if questionnaires are distributed to be filled out and returned on the spot, it is possible for a staff member to engage more than one visitor at a time.

These advantages present certain disadvantages:

- It is difficult to develop good questions, and particularly difficult to write questions that cannot be reinterpreted by the respondent. The more subtle the question and the more complex the information desired, the greater the problem.
- The flexibility provided by the ease of distribution of questionnaires is offset by the problem in getting them back. Survey response rates of 40–60 per cent for questionnaires sent out in the mail are usually considered quite good, even with telephone or mail reminders sent after an appropriate interval. This rate always raises questions about whether the respondents are representative of the whole sample polled.

On the whole, questionnaires are particularly suited for large samples (for example, demographic profiles of museum audiences), for front-end testing of general ideas among a general population, or determining preferences visitors would have for certain leisure activities.

In the United States, Marilyn Hood is known for her careful work using written surveys.[2] Her publications provide useful advice on how to use surveys, as well as discussing results of her own research. She recently summarized this work, as well as a multitude of other surveys over the past 90 years (Hood 1993):

> We know from hundreds of museum visitor surveys that the typical frequent museum visitor . . . is in the upper education, upper occupation and upper income groups . . . This social class factor applies across the spectrum of museums – from zoos, science-technology centers and children's museums to historical sites, botanical gardens and art

museums. Our frequent visitor base and our volunteers and members normally come largely from this group of people because they are attracted to the kinds of experiences museums offer and they find those offerings and activities satisfying.

These folk emphasize three factors in their leisure life: opportunities to learn, the challenge of new experiences, and doing something worthwhile for themselves. The occasional visitor, on the other hand, is drawn more to leisure activities that emphasize opportunities for social interaction, participating actively, and feeling comfortable and at ease in his or her surroundings.

(Hood 1993: 17)

Referring to the interests of visitors and non-visitors alike, she stresses that

six "attributes" of leisure participation are basic to adults' decisions to participate or not participate in a variety of leisure activities and places, such as going to arboretums and botanical gardens, to zoos and aquariums, to museums and historical sites. The six leisure attributes are, in alphabetical order, being with people (social interaction), doing something worthwhile for oneself or others, feeling comfortable and at ease in one's surroundings, having a challenge of new experiences, having an opportunity to learn, and participating actively.

(Hood 1988: 85, summarizing Hood 1983)

Types of questionnaires Evaluators frequently use simple, short questionnaires in conjunction with observations of visitors. Many published evaluation reports provide the questionnaire that was used to obtain the results. It's tempting to use a questionnaire developed previously, on the assumption that this will provide a valid instrument that has had all the problems removed through use and refinement. The best advice for anyone proposing to use a questionnaire in conjunction with a visitor study is to look at others' questionnaires for examples and suggestions but to make up every questionnaire fresh for its particular purpose. There are several reasons for this:

- Just because a questionnaire has been published does not mean it has been extensively field tested or that it worked well in a previous setting.
- Times and conditions change. A question that was clear in one context may be confusing to visitors in another setting. Factors such as the geography of the building may change the meaning of a question, even if it refers to a specific exhibit.
- The ability of visitors to apply their own interpretation to a question should never be underestimated.
- The task of thinking through the questions to be asked is worth the effort, if for no other reason than that it will help clarify the objectives of the current investigation.

In short, all questionnaires have to be field tested in the setting in which they will be used and with the people who will be expected to respond to them.

Trying out questions with colleagues, family members, or friends is useful and a simple way to spot some problems, but it is *not* a substitute for piloting – that is, field-testing questions in the exact setting where they will be used.

People can be asked factual questions or questions about opinions or feelings as illustrated in Figure 6.8. They can also be questioned about their views on these topics now, what they were in the past, or what they might be in the future. For each of these domains, the validity of the answers diminishes as we move along that dimension, as illustrated in Figure 6.8. Visitors' responses are less likely to match what is in their minds as we move from facts to beliefs to feelings, and increasingly less likely to be accurate as the events discussed are something that happened in the past, or have not yet occurred.

Webb *et al.* (1966), in their book on the use of unobtrusive behavioral measures, deplored the over-reliance on interviews and surveys. Their comments are applicable to visitor studies.

Today, the dominant mass of social science research is based upon interviews and questionnaires. We lament this over dependence upon a single, fallible method. Interviews and questionnaires intrude as a foreign element into the social setting they would describe, they create as well as measure attitudes, they elicit atypical roles and responses, they are limited to those who are accessible and will cooperate, and the responses obtained are produced in part by dimensions of individual differences irrelevant to the topic at hand.

But the principal objection is that they are used alone.

(Webb *et al.* 1966: 1)

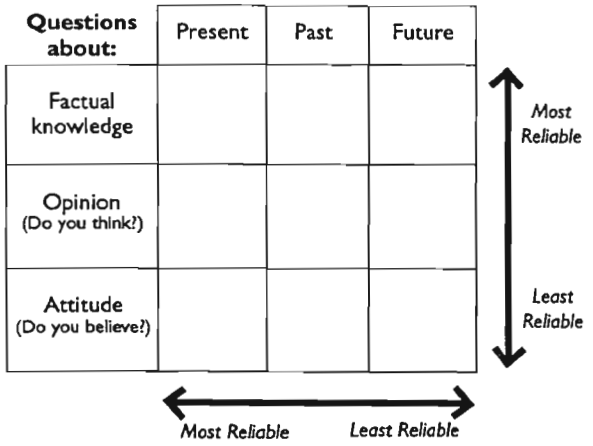


Figure 6.8 Types of questions for questionnaires and interviews

Although researchers today routinely use a broader range of methods, including many in-depth approaches to studying human behavior, a great deal of work in museums (and formal educational programs) still relies on "*the* evaluation" which means, for the practitioner, a survey.

Webb *et al.* did not deplore the overuse of human *language* as a source of data, but the particular application of formal questionnaires and interviews as the only source of data. They suggested that social scientists pay more attention to the methodologies used by detectives in mystery stories, by journalists and others in investigative fields. They also acknowledged that all methods have weaknesses, but, by varying methods, at the minimum, a range of weaknesses (and a range of strengths) are brought to bear on any situation studied.

Other written responses Other types of writing that have been used in visitor studies include the following.

Comment cards Many museums collect comment cards from visitors, but some never use them. They can provide a rich source of ideas about visitor concerns, and used comparatively they can provide excellent information about visitor response to exhibitions and programs.

It is usually impossible to determine how representative visitor comments are of the total visitor population. But so long as the cards are not intended to substitute for a formal visitor study, that represents no problem. There are many situations where representativeness is irrelevant. If the museum staff want to know if some exhibit is offensive to any individuals or groups, want to solicit new ideas, no matter what the source, or are eager for selective responses from visitors for illustrative purposes, then it doesn't matter who filled out the card, as long as it was a genuine visitor.

Second, if visitor comment cards are analyzed systematically and regularly, then changes in the nature, volume, or quality of comments can certainly be taken as legitimate data for decision-making. Again, the key to turning information on comment cards into evaluation data lies in developing a systematic collection and analysis scheme. The design of the cards, with possible prompts on them, may also enhance their value. If museum staff have a specific question concerning their visitors, then the most direct way to obtain information is specifically to ask for answers to that question.

Third, for some kinds of evaluation questions, comment cards – generally filled out by the most vocal opinionated visitors – may be the best source of information. For example, in a study we conducted for Boston's Museum of Science, the staff was interested to know whether anyone objected to the content of an exhibition about sexual reproduction. We read hundreds of comment cards, including dozens by teenagers that illustrated their embarrassment or their newly acquired knowledge about reproduction, but found none that were critical of the exhibition's major content.

Ironically, we found a few cards from animal rights activists who objected to the use of animal materials in the exhibit. For example, the exhibit included a

small fish tank that some visitors felt was not an adequate environment for the specimens it contained. These cards confirmed that anonymous comment cards were an appropriate method for finding ideological critiques of the exhibit.

Participant journals If the subjects of an evaluation study have some long-term involvement with a museum, such as teachers who spend several days at a workshop or visitors to a multi-visit program, then participant journals can be an immensely rich source of information about a program. If such journals are to be used as data for an evaluation, it's important to negotiate early who will read the journals and whose property they will ultimately become. Participants may be willing to write candid, personal journals and leave them behind for the museum staff, but only if that is agreed upon at the start of a program. It takes considerable effort to keep journals. Providing good quality blank notebooks can help, and providing time during the scheduled activities for participants to write in the journals is essential.

Other written responses Bicknell and Mazda (1993: 45) employed an ingenious form of written response in evaluating theater performances at the London Science Museum. She gave visitors cartoon drawings of stick figures with bubbles and asked them to fill them out. A sample is provided in Figure 6.9.

Beside providing feedback to museum staff, variations on the typical comment cards can enhance exhibits. In some situations, used most often in children's museums and discovery rooms, visitors are asked to contribute their own ideas to exhibitions. An exhibition on families may ask visitors to add comments on their own families; one on measuring devices may ask visitors to add their own measurements to a list; or an activity room at a pop art exhibition may provide visitors with the opportunity to make their own cartoon. The extent to which visitors engage in the activity, the disappearance of the materials, and the nature of the responses can all be used to find out something about the visitors' response to an exhibition.

As with all evaluation means, some systematization is needed to turn a written response into a component of an evaluation study. This usually includes:

- careful documentation of the *initial state*;
- systematic recording of the *changes over time*;
- a system for *analyzing* the changes; and
- a *theory* for relating the changes to something significant about the visitors and *ruling out alternative explanations*.

For example, if comment cards are used to decide on the popularity of an exhibition, it's important to know what the typical numbers and kinds of comments are before analyzing the responses to a specific exhibition. It's important to monitor the cards regularly, making sure there are always blank ones (and writing utensils) available, and to develop a systematic way of analyzing the responses. Finally, if the responses change it's necessary to make sure that the reason is the change in the exhibition and not some change in visitors. If an

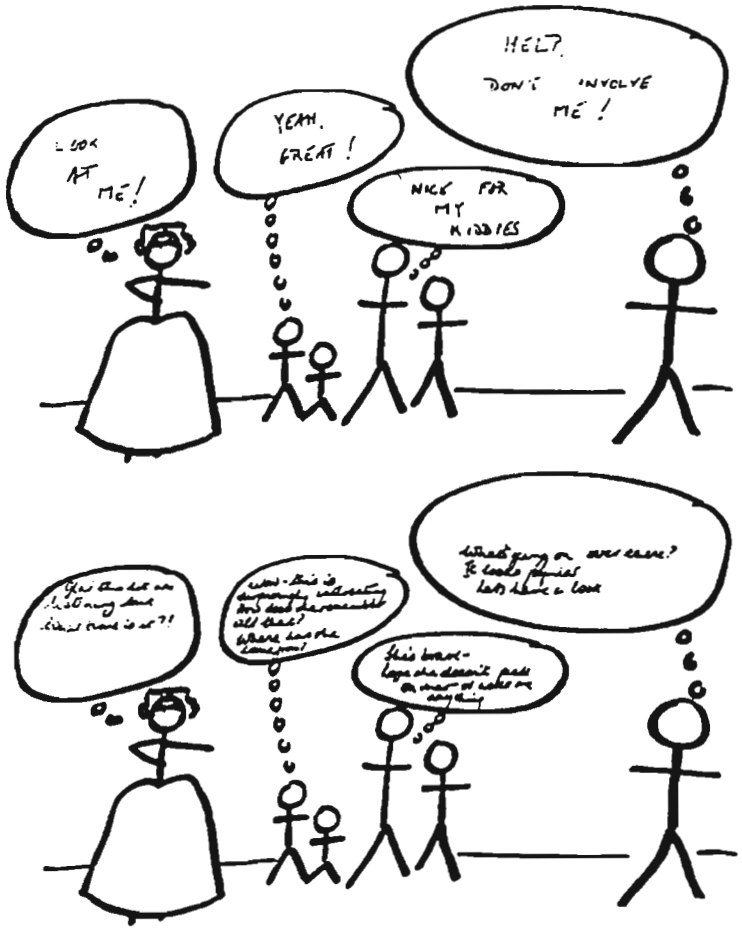


Figure 6.9 Stick figure "bubble charts"
Source: Bicknell and Mazda 1993.

overnight, teenage, camp-in group has been to a gallery, its members may fill out hundreds of cards in a single visit and skew the results when compared to a week's worth of visitor responses not including such a group.

Part of the evaluation of the Birmingham Museum and Art Gallery included visitors' memories of their visit (McManus 1993b). These were solicited months after a visit by writing to people who had given their addresses when they filled out comment cards and asking them to respond by "writing about your memories of your visit to *Gallery 33* on the attached sheet." (McManus 1993b: 371). The study, not surprisingly, had a low response rate (21 per cent) but produced rich data indicating that, even without prompting of any kind, visitors retained intense and specific memories of objects and experiences and were willing to write about them.

Pre- and post-tests Pre- and post-tests are a specialized form of questionnaire, appropriate for some circumstances. In school situations, tests are the most common way of assessing learning. The term "test" can be applied to performances (driving tests, musical auditions, and practical exams) and oral and drawing tasks as well as to written examinations, but written ones are most common. When given both before and after a potential learning exposure, they become pre- and post-tests.

Museum researchers generally acknowledge that significant learning in a museum setting usually cannot be assessed by matched pre- and post-tests just before and after a typical short visit. Most visits are for such a brief time, so unfocused, and overshadowed by so many important other contributors to each individual's overall knowledge (e.g., background, experiences, prior learning, and personal interests) that such tests don't inform us a great deal about what visitors gain from a visit. However, pre- and post-tests can and are still used. If a museum visit has a specific objective, often the case for school groups, it is legitimate to ask whether that objective has been achieved. For a good example of such a use of Piagetian tasks as pre- and post-tests, see Linn (1980).

Since short-term knowledge gains can be deceptive, or people may show a change in their responses immediately after an experience and not retain much later on, it is desirable to extend the test period and either give the post-test weeks or months after the visit or repeat the post-test after some time to see what is retained. Long-term gains are much more impressive than short-term ones and have been noted in some studies of visitors in museums.

Written pre- and post-tests can be developed for both quantitative and more qualitative research approaches. Drawings, reflections, and written journals can be used instead of questionnaires to compare visitors' reactions before and after a visit of any length or following a collection of exposures to a museum.

A great advantage of matched pre- and post-assessments of any kind is that behavior can be compared rather than measured absolutely. This tactic is desirable in almost any study, since comparison of two situations is simpler and more accurate than efforts to measure or describe behavior and compare

it to some standard. Ratios in the same metric are easier to determine than absolute values. For example, an accurate timing device and an accurate measure of a distance are needed to determine how fast a runner can go. However, to compare two runners, all you need is identical starting points, and a way of determining who finished first.

What is required for using pre- and post-tests is a systematic collection of data, good recording of information and to make sure that the *same* questions are asked under the same conditions before and after the activity to be assessed.

Visual means

Visitors can be asked to use symbolic language, as well as, or instead of, words. Several published reports illustrate the use of drawings and other visual means to find out what visitors have gathered from a museum visit.

Maps and floor plans Visitor studies practitioners have used both physical and conceptual maps of museums as evaluation tools. Novak and Gowin (1984) proposed concept maps as appropriate means for assessing students' knowledge of school subject matter. Asking students to draw visual descriptions of the relationships between concepts forces them to think beyond the isolated facts to find connections. Teachers can gain an understanding of how their students have thought about a subject by looking at these concept maps. VanLuven and Miller (1993) employed concept mapping in exhibit development. They asked visitors to draw such maps, to arrange cards with words on them related to the exhibit content ("rocks," "molecules," "cells," and "atoms") for a chemistry exhibition into any order that made sense to them, or to link cards with connectors that included phrases such as "are made of" or "are the same as." The exhibition developers used the visitors' ideas about the conceptual connections to reflect on how best to organize the exhibition.

Karen Wizevich (1994) provided visitors with floor plans of an exhibition and asked them to annotate these. Her model for this approach was the way in which architects use scale drawings to help them think about the space they are developing. Anderson and Roe (1993, vol. 2: 13) reported that children were asked to draw maps of places they visited at a children's museum.

By asking visitors to respond in ways that allow them freedom to express themselves as they wish, and that may be unusual to them, it is possible to get insights into visitors' thinking that might not be available through more conventional questioning.

Drawings Both children and adults have been asked to draw to gauge their response to exhibitions. As part of a front-end analysis of what children know about skeletons, Jack Guichard (1995) asked children 6–8 years old to draw a skeleton into an outline of a human body. He found that most children filled the drawing with a "bag of bones" not connected in any way. Others drew long bone sections, such as a single bone for the entire leg, or what he called "fish

knuckle-bones" skeletons, in which the bones were connected to a central support, but not in the form that a human skeleton is articulated. Only a very small fraction drew skeletons that resembled human figures. When children were given a school lesson on the structure of the human skeleton with a skeleton as an illustration, they produced drawings that resembled the proper human anatomy shortly after the lesson but reverted to their original drawings six months later. However, a significant number of children of the same age who had experience with a museum exhibit that allowed them to make a skeleton move as they moved (they rode a stationary bicycle and saw a skeleton before them perform parallel motions) drew human-type skeletons not only immediately after the experience but also six months later.

Other researchers (Coe 1988, Crosthwait and Mask 1994) have asked children to draw zoo animals to gauge what children had learned from a visit to a zoo.

Adults can also be asked to draw to reveal aspects of the museum experience. Wittlin (1949: 239–51) refers to drawings in her early experimental work in visitor studies, and Worts (1993) has used drawings on comment forms as one evaluation tool in his studies of visitor responses to newly developed galleries in an art museum. Over nine months, about 12,000 cards were used and 5,000 left in drop off bins. He describes the results thus

> the bulk of comments are personal and reflective. Many provide insight into how visitors are interacting with particular objects or groups of artworks. Often there is great sensitivity and intensity in the responses. A large number of visitors who use the cards choose to draw imagery of one kind or another. Some people copy pictures on display. Others adapt images on display to their own creative ends. Still others will create wholly new images, presumably inspired by their time in the gallery, which reflects what is on their mind at the moment. Often, people seem to want to see themselves reflected, either literally or symbolically, in their imagery – and in their writing for that matter. This has been an important psychological phenomenon for Gallery staff to become aware of – people want to see themselves reflected in their visits to museums. This has the potential to affect dramatically the way in which art displays are conceived and installed.
>
> (Worts 1993: 48)

Interviews

Museum professionals have asked visitors what they think about an exhibit for as long as visitor studies have been carried out. Interviews represent an almost irresistible technique for any museum professional interested in making the museum responsive to its clients. Nothing is easier than to go to the public areas of a museum and talk to visitors. But few visitor study activities are harder to carry out so that useful information results. I have already commented on both Higgins's and Murray's frustration on finding that most visitors could not articulate what they had learned.

Interviewing is a skill that can be learned but also *must* be learned. Interviewers need to ask the right questions and not lead their interviewees. They must also learn to listen rather than talk. In general, people respond to interviews honestly; that is, they try to answer the questions asked to the best of their ability. Thousands of interviewers have learned from experience that very few people deliberately lie when questioned by an interviewer. It does not follow, however, that what people say therefore matches what they do, believe, or feel. As in the case of questionnaires, responses about factual matters are more likely to be reliable than those about opinions or beliefs, and responses about the present (or very recent past) are more likely to correspond to what happened than are responses about the distant past. Projections about the future are necessarily subject to modification.

Many observers have noted that museum visitors, like other respondents, are eager to please, and tend to give what they consider an "acceptable" response or what they think the interviewer wants to hear. For example, one reason election exit polls sometimes differ from actual voting results is that voters may not admit racial prejudice or that they voted for an unpopular candidate. Thus, interviewers need to frame their questions neutrally, consider how the question will sound to the person hearing it, and consider how the interviewer's *perceived* characteristics and affiliation may influence the respondent.

When visitors are asked about exhibitions, they often don't remember what they have seen or have done. It is unfair to people from whom you want information to ask them to remember a great deal, especially when they had no notion that anyone would ask them about it. If visitors are simply asked which exhibit they liked best, they may not remember. In their effort to please, they may make up an answer (including reference to nonexistent exhibits!) or simply name what they do remember. Post-visit interviews should provide visitors with a chance to recall what they might have seen. Evaluators have used a variety of ways to help visitors remember an exhibition. They may provide a list of exhibits, a floor plan, or show visitors photographs of an exhibition to remind them of where they might have stopped. Two museums that collaborated in a multi-site study (Anderson and Roe 1993) found that providing visitors with instant cameras and asking them to take pictures as they toured the museum was a useful adjunct to interviews.

Using photographs not only focused visitors' attention, but stimulated memory and verbalization.

> In the researchers' experience, a person – not wanting to be perceived as giving a wrong answer – will often try to tell the interviewer what the person thinks the interviewer wants to hear. But by taking their own pictures, visitors seemed to gain a sense of ownership and take control of the process. Even when looking at photographs taken by other visitors, subjects responded in greater detail and depth than would be expected in interview situations *sans* photographs.
>
> (Anderson and Roe 1993, vol. 2: 41)

Types of interviews Interviews, like questionnaires, can be carefully prepared and standardized, or they can be more naturalistic. Each has its advantages and problems. Very brief informal interviews may provide sufficient information to reveal the shortcomings of a prototype exhibit; a single interview with a knowledgeable respondent is better than nothing if you need to find out in a hurry whether a label may be offensive to a specific audience segment. Preparing interview formats is easier than preparing questionnaires because it is possible to change the wording if a question is not interpreted as expected. But awkward and ambiguous questions still make an interview difficult to interpret, and in most real life situations interviewers have only a short time with respondents. If you have to spend time explaining questions, not only does it make the answers less reliable, it also uses precious time before a respondent will lose patience with you.

Research studies tend to use longer and more detailed interviews than many evaluation studies. Some special types of interviews are discussed below.

Clinical interviews Naturalistic evaluators have adapted the methodology of developmental psychologists and use clinical interviews to try to understand what is going on in the minds of their respondents. Feher and Rice (Rice and Feher 1987, Feher and Rice 1988) pioneered Piagetian interviews (Piaget 1929) to determine visitors' science conceptions and to guide development of appropriate exhibits. They asked children who were examining physical objects under study to describe what they saw and predict what would happen as they manipulated the objects.

> Our methodology for this work is a field version of the Piagetian task-based clinical interview. The interviewer, much like an anthropologist in the field, stations herself at the chosen exhibit. When a child approaches and starts investigating the exhibit, the interviewer engages the child in dialogue using questions from a protocol. The protocol is developed from a large number of preliminary test interviews, to ensure that the wording, content and sequencing of the questions yield the best possible information.
>
> (Feher 1990: 37)

Another example of such interviews comes from a comprehensive study in an art museum to "develop a conceptual framework for interpretive materials for novice, or lay, visitors" (McDermott-Lewis 1990: 1) and to create some experimental labels and gallery guides. The author and her colleagues used tracking, question boxes for comments, and a 1,000-plus visitor survey.

> But, ultimately, what was most useful and thought-provoking were the in-depth interviews we conducted, trying to understand our visitors' experiences with art. What went through their heads as they looked at individual pieces? What were their most memorable experiences with objects? And what expectations did they bring that shaped their encounters with art?

> Our in-depth interviews and evaluations were not pristine, academic studies. Instead they were vehicles for us to gain insights that could help us make better decisions.
>
> (McDermott-Lewis 1990: 5)

The author concludes that the following factors are important in creating explanatory materials for lay visitors.

> First, visitors want their learning experiences to be directly related to the objects they see . . .
>
> Second, visitors tend to learn in short bursts. They want to commit, at least initially, to things that will only take a little time . . .
>
> Third, every interpretive device won't work for every visitor, so we need to accommodate the range and variety of our audience . . . We ended up with a buffet analogy, of having a variety of options available. Every offering may not be meatless, but there should be at least one vegetarian item . . .
>
> Fourth, we need to send a clear hospitable message to our visitors. Many novices have a fragile, though positive, attitude about art and museums, and they need to see that we care about their experiences . . . Finally, successful interpretation for novices means accepting where they are – keeping their backgrounds, preconceptions, and values in mind and, most importantly, taking the position that we're not there to downplay their experiences, but to build on and broaden them.
>
> (McDermott-Lewis 1990: 137–8)

Focus groups Focus groups were first used by market researchers to explore consumer responses to new products and have found a use in museum research. Some authors have called any group interview a focus group. Focus group methodology consists of gathering a selected group of interviewees, usually up to a dozen, who discuss a topic with a trained interviewer in a room that is equipped with a one-way mirror, behind which the people who desire to learn from the focus group listen in on and observe the interview. The primary audience gets the benefit not only of the respondents' words, but also of their gestures and body language as they discuss whether they prefer one exhibition theme to another, how they might react to an exhibition of a particular kind, what they know about a potential exhibition topic, or how they feel about museums. As these examples suggest, focus groups are most commonly used for front-end studies.

The most extensive published use of the focus group method in a museum visitor study was a research effort sponsored by the Getty Center for Education in the Arts and the J. Paul Getty Museum (1991) that involved eleven major United States art museums in an attempt to better understand their visitors and non-visitors. Each institution held focus groups with both visitors and non-visitors. Here is how their report describes the method as used in this project:

> The method consists of round-table discussions among eight to twelve prescreened participants selected from a targeted population. The group is led by a trained moderator who follows a discussion outline prepared in consultation with the client. Focus groups are held in special facilities with a conference room for the group discussion and an observation room behind a one-way mirror. Facilities are equipped with audio and videotape recording equipment for record keeping.
>
> As a qualitative research technique, focus groups serve two important objectives. First, they provide insight into visitor attitudes, perceptions, and behavior. Second, they provide a catalyst for communication among the observers of the group (i.e. those people behind the one-way mirror). Often the interaction among observers is as powerful a product of the research as the findings themselves.
>
> (Getty Center 1991: 4–5)

The project involved conducting five to six focus groups for each museum. First, the team held a focus group for museum staff, then two pairs of focus group discussions were held for both visitors and non-visitors. In each instance a visit to the museum was scheduled between the times of the pair of group discussions. The authors list a number of conclusions from the focus groups, generalizations from analyzing the tapes of all the discussions. They found that museum staff expectations for their visitors do not necessarily match the reasons why people come to museums nor what the visitors say they get out of their visits. Non-visitors stressed that they found art museums intimidating, that they were unaware of them, had insufficient free time to visit, were not interested, or found the locations of the museums not to their liking. Among the findings for visitors and non-visitors alike ("non-visitors" had at least one visit to a museum between the two focus groups) are that they found museum visits "meaningful and rewarding" but also made individual meaning of their experience. They want and need introductory information, "on how to organize the visit, what to see and how the museum is arranged." The more people know about specific objects the more they can connect with them, but the informational material in art museums is often inadequate, and the environment of the museum – the physical surroundings and presentation – influences the response to the visit.

The project created not only a written report but a videocassette with excerpts from some of the focus group meetings that provides an informative glimpse into the United States public's response to art museums in the late 1980s.

Types of respondents The most obvious respondents for visitor study interviews are the visitors themselves, but powerful information can be gathered from other groups. Museum staff of all kinds have been used successfully to find out about visitors. These include interpretive staff (Hein 1995a) as well as security staff (Davidson 1989). We once interviewed highly knowledgeable 13 to 14-year-old boy scouts who volunteered at the National Museum of the Boy Scouts in Murray, Kentucky. They were extremely helpful in informing us

about the likes and dislikes of visitors and the problems they encountered with some exhibits.

Another special type of person to be interviewed is experts used to assess museum exhibitions or museum environments. Information from interviews with various kinds of experts – those knowledgeable about the subject of an exhibition, about museum visitors, or about other aspects of museumology – should not be confused with information from visitors, but their response can nevertheless provide useful information to improve exhibits and make places better able to communicate with visitors. The special qualities of this source of data have been discussed (Frisch and Pitcaithley 1987, Shettel 1994).

Interview time-scale Interviews can be carried out immediately following an experience or after some time has elapsed. Increasingly, museum evaluators are using delayed interviews to find out what people remember from a museum experience one to six months after the immediate impact (and distractions) have receded. It is also possible to interview people about their long-term memories of museum experiences. What do they remember from childhood (Falk and Dierking 1994)? What were the most memorable museum experiences?

At a recent conference of museum professionals (Falk and Dierking 1995, although the following material is not included in the publication) participants were asked to reflect on their most memorable museum experience. Not only could most participants recall highly memorable experiences, they often described them in religious terms, as "epiphanies."

> This session profoundly influenced the rest of the meeting. The experiences participants articulated were profound, often representing important intellectual, as well as emotional experiences. What was striking, though, was the breadth and uniquely individual nature of the recollections.
>
> (Hein 1994b)

The kinds of experiences most frequently mentioned were:

1 The value of being able to go behind the scenes, or to see a rough work in progress. Several of these referred to the powerful effect of such an opportunity as a child.

2 The nature of the family museum experience. Many of the examples shared by participants included descriptions of exhibits that led to family discussions, physical accessibility/inaccessibility of the museum when visiting with multigenerational groups, parents who are museum phobic, parents who took children and/or provided their own interpretation. For example, there was a description of a family visit to MoMA that did not lead to any discussion for this family, but a visit by the same group to the exhibition about Japanese internment at the National Museum of American History that did stimulate family discussion because of the relevance of the topic to the family.

3 The power of museums to provide contexts for connections and "getting it." One person commented "[I finally understood] why my one-eyed son has trouble catching a ball" after interacting with an exhibit at a science center. Many of the epiphanies (described in those terms) were about experiencing art or had occurred in art museums. At least nine comments were of this kind. Not all were described as an epiphany, but they all share the idea that museums can generate a "Eureka" response.

4 The value that light, air, and connection with the outside, real world can contribute to the museum experience.

5 The importance that personal connection plays in the value of museum experience: what one knows about, can appreciate, can understand (or is frustrated by because one's needs are not met) is memorable.

6 Museum fatigue does seem to play a role in the museum experience and for some visitors, visiting alone is the primary way to have a pleasurable experience and avoid the stress brought on by matching a personal pace to a companion's needs. It's impressive that museum professionals admit that, for them, periods of time *less than 30 minutes* are the limit of tolerance for an exhibition. Also, we need to consider the frequent references to the pleasures of visiting alone that occurred when museum professionals often stress the value of group visits.

7 Early museum experiences seem to be an important part of many people's childhood memories.

(Hein 1994b)

Probing visitors' memories of their museum experiences has become a particularly attractive activity among museum visitor researchers. If the traditional methods of experimental-design research do not reveal much impact from immediate pre- and post-tests of visitors, perhaps memories of visits will reveal the long-term impact. In addition, memory may be a better indicator of cognitive change than short-term recall of what must necessarily be rather superficial information. Stevenson (1991) carried out a careful study of family visits to Launch Pad, an interactive exhibition at the London Science Museum. His work included visits to the families' homes six months after their visit. He found that families were delighted to discuss their visit and could generate uncued, spontaneous memories about their visit. Even more memories were brought forth when prompted with photographs. Specific details of the exhibits and family interactions with them were conspicuous in his results. Falk and Dierking (1992) have reported parallel results.

Memory research, as it is currently used in visitor studies, is itself a product of the cognitive revolution and the re-emergence of mind as an acceptable component of psychology. Visitor studies research emphasizes "episodic memory," a memory of personal experiences, as distinct from "semantic" memory (knowledge) and procedural memory (how to do things). Ironically, one of the standard criticisms of Piaget's work by experimental psychologists was that he did not study traditional components of learning theory, such as

"memory." His critics defined and restricted memory to semantic memory, usually assessed by having subjects memorize random series of numbers or nonsense syllables in a sterile, laboratory environment.

All the research to date on visitors' museum memories reinforces the conclusion that visits are memorable, that visitors combine personal agendas with an opportunity to enlarge their understanding of the world, and that visitors incorporate novel elements into reformulating their conception of the world.

Interviewing for staff development Finally, visitor interviews, besides providing information about visitors, can play an important role in staff development. Staff who have the experience of interviewing (formally or informally but systematically) visitors often significantly change the way they carry out their roles as interpreters. At Colonial Williamsburg, for example, interviewing visitors has become a major part of staff development activities (Graft 1989), and Springuel (1996) used it "as a framework for developing docent training." Some years ago, for a similar aim, Hayward and Jensen (1981) carried out parallel interviews of staff and visitors to contrast their views on exhibitions and the interpretation process.

Other methods

Visitors' conversations

In an attempt to overcome the limits of interviews, Lucas *et al.* (1986) describe mounting a microphone on selected exhibit cases in a natural history museum and recorded visitor conversations. They analyzed the conversations using a carefully constructed coding scheme developed from a pilot study. A similar approach was devised by Tunnicliffe (1995) who studied family visits to zoos and natural history exhibitions.

Museum objects as prompts

In a variant of the method above, Dierking and Holland (1994) noted the questions that visitors asked when they interacted with manipulative materials. As part of the evaluation of an exhibition at a natural history museum the researchers positioned themselves along with an interpreter who had a cart that contained objects similar to those in the displays. They then noted the conversations between visitors and the interpreter.

Protocol analysis

A technique some cognitive psychologists have favored to explore what goes on in people's minds as they solve problems consists of asking a subject to "think aloud" while carrying on some task (Ericsson and Simon 1993) – solving a mathematical problem or classifying a set of objects, for example. By listening to and recording the verbalization of what the subject thinks he or she is doing, researchers can gain clues about mental processes. Dufresne-Tassé and Lefèbre

(n.d.) have used this technique to build up an understanding of how visitors approach objects. They carried out a series of experimental studies with adults who visited selected galleries in a range of museums and experimental settings, and who thought aloud as they viewed the objects.

> we found that if an adult is asked to describe what he sees, thinks, feels or imagines as he walks through a museum gallery, one can construe his psychological functioning from what he says . . . A topical analysis shows how this functioning is structured, while a sequential analysis reveals its organization in time and, to a certain extent, provides an explanation of the particular form that this organization takes.
>
> (Dufresne-Tassé and Lefèbre n.d.: 4)

The analysis of the transcribed tapes of the visitors' comments is based on the following categories, developed from preliminary work:

> The MENTAL OPERATIONS, performed by the visitor to process his experience . . . [such as] expressing, taking note of, comparing-distinguishing and verifying . . .
>
> The particular ORIENTATION of the visitor's psychic activity at the moment the operation is performed . . .
>
> The DIRECTION OF ATTENTION during the operation, to the object observed . . . the creator of the object, other objects, other contexts . . .
>
> The particular FORM the operation may take . . . question, a hypothesis, exclamation . . .
>
> (Dufresne-Tassé and Lefèbre n.d.: 5–6)

They conclude that:

> Contrary to the expectations of museum educators . . . visitors are not passive when they look at natural science objects, even when these objects are displayed as they might be at a jeweler's . . . visitors' mental operations, when looking at objects, do not vary according to their level of education and that this functioning, even if it is cognitively and effectively intense, constitutes the major benefit of a visit by virtue of the multiple pleasures it brings about.
>
> (Dufresne-Tassé and Lefèbre n.d.: 12)

Others have also used this method (Ohta 1996, Korenic 1996). Korn (1992) gave visitors a tape recorder to carry with them during a visit to an art gallery and instructed them:

> I would like for you to spend as much time with [this painting] as you like. Here is a tape recorder. I would like for you to speak into it and say what you are thinking about when you look at this painting. You can talk about anything that comes into your mind. There are no right or wrong things to say – we just want to know what our visitors think about when they look at it.
>
> (Korn 1992: 182)

Visitors as teachers

As part of a detailed study of children's activities at a science center, Gottfried (1981) asked older elementary school children to go to classes of younger children two weeks after their visit and tell the first and second graders about their experience. The children were able to teach others in detail about their visit although they had taken no notes and were not observed to be particularly attentive to, or reflective about, their experience.

Combinations

Meta-analysis

In the formal educational literature, one effort to overcome the limitations of individual studies involves the use of "meta-analysis" of research (Glass 1977), the attempt to sum the knowledge gained from different studies by analyzing results across studies, even if the individual situations and experimental conditions varied. Such results, often illustrated in review articles, usually require qualitative judgments about the overall conclusions, and frequently lead to controversial discussions about the "strength" of the findings. There have been few attempts to reach similar conclusions in the museum literature that combine studies, although recent publications in research journals are increasingly referencing this growing body of literature.

Walberg, the author of many meta-analyses, and colleagues (Ramey-Gassert *et al.* 1994) reviewed studies on learning in informal science settings. These authors find from their perspective that there is little research literature they can use to build a systematic description.

> Museums provide opportunities for students to be active participants in learning by manipulating real objects in a stimulating setting thus enhancing conceptual learning in the classroom. Both components of learning are important for understanding of complex science concepts. Much of the literature pertaining to learning in museums is anecdotal and craft wisdom, indicating that more collaborative research efforts are needed in the area of science education in museum settings
>
> (Ramey-Gassert *et al.* 1994: 345)

Multiple methods

The examples provided above were all chosen because they exemplify particular methods that have been used in visitor studies. Many of the studies, as indicated or at least hinted at in the examples, used more than one method in the research or evaluation. Interviews were supplemented by observations, and vice versa. Small-scale visitor studies, carried out with limited resources and time, often use only one method. Thorough studies, especially those that hope to gain some insight into visitors' understanding beyond the immediate technical problem presented by a particular exhibit or display, usually use more than one way of obtaining information.

Studying human activity is neither simple nor easy – either the effort involves interfering with the activity, which inevitably distorts the natural situation, or the observer tries to examine what goes on "unobtrusively," with all the limitations which keeping a distance (and making assumptions about the meanings of what is observed) imposes. Also, human activity always involves the past experiences people bring with them and the future of their intentions, whereas our methods usually examine only the present, provide only snapshots of what happens now. Thus, all methods have limitations. The key to deeper understanding of how and what visitors learn in museums is not to try to achieve a single, perfect method of study, but to recognize the limitations of all individual means for doing so and make an effort to gain information and insight about what visitors learn using multiple methods.

Doctors' diagnoses result from the combination of evidence arrived at from laboratory tests, personal examination, and conversation with the patient (or so we all hope is the case); journalists are troubled if they have only one source for a story; lawyers and detectives "build a case," putting together the clues and the evidence. Similarly visitor studies researchers and evaluators need to examine multiple sources in their attempts to understand how visitors make meaning in museums.

In a detailed study of a multiple-visit education program for schoolchildren at the Valentine Museum, an urban history museum in Richmond, Virginia, Luetjen and Holmes (1994) employed the following means:

- pre- and post-visit surveys;
- pre- and post-program questionnaires;
- pre- and post-program drawing tasks;
- student journals;
- ethnographic data collection (a descriptive narrative prepared by an observer who records speech, actions, and the body language of students and the teacher).

In a summative evaluation of an exhibition at Boston's Museum of Science, Hein and Mello (1993) used:

- observations of general visitors;
- interviews with general visitors (prompted by pictures of the exhibition);
- observations of school groups;
- interviews with the school groups' teachers;
- observations of camp-in groups in the exhibition after hours;
- staff interviews;
- a small number of "thinking-aloud" interviews with single, adult visitors.

And in a thorough evaluation of a new gallery at the Birmingham Museums and Art Gallery (Jones 1993), evaluators employed nine different methods:

- exit questionnaire;

- tracking study;
- visit memories, obtained from a postal survey of visitors;
- questionnaire concerning an interactive video program;
- data on numbers of "hits" on two touch screens;
- study of school use of specific components, involving observations, interviews, tape recordings of visits;
- visitors' written comments.

Multiple methods are desirable in any research study; they are essential in qualitative work, which relies on triangulation, on the congruence of different sources of data, for validity.

Discussion

The amazingly wide range of methods employed in museum evaluations and research attests both to the complexity of the task and to the recognition by visitor studies practitioners that they need to use all the methods available from the wide world of social science research.

Although much exhibition and program evaluation may still consist of simple (often poorly) designed surveys and interviews, all professionals in the field recognize the need for using multiple methods, and, especially, for using the appropriate method for the research questions of interest. In our own work (Engel and Hein 1981, Hein 1982, Hein 1995a), we have consistently used an evaluation matrix on which we match issues to be evaluated with means for doing so. This graphic display of the evaluation concerns and the methods we plan to use to find out about them allows us to make sure that all issues are addressed (usually by more than one means, and, if feasible, by three different means) and also provides a guide for developing the actual instrument that we use for each evaluation.

In comparison with other educational settings, long-term, sustained efforts to examine learning in the museum are missing from the visitor studies literature. There have been longitudinal studies of children's growth in school, observational studies that span an entire school year as well as other developmental approaches to examine learning that span many years. The voluntary, fleeting nature of most visitors' involvement with museums has made such an effort difficult. To date, no one has carried out such a study. Studies of visitors' memories, usually interviews about past experiences, are a step in the direction of attempting to understand both the long-term and the cumulative impact of museum visits.

Another area of study, examination of the exhibit development process itself, has recently received some attention (Macdonald and Silverstone 1990, Roberts 1997). This work does not involve new methods, but will be discussed for its relevance to the Constructivist Museum in Chapter 8.

7

Evidence for learning in the museum

The most casual observer of educational methods could not fail to notice that the receptive mind of a child or a youth learns from an infinite variety of sources. We all know that we begin at one end of education, but there is no period in life of the most aged where the other end is reached . . . Whatever becomes suggestive to the mind is of educational value. That Museums have from their very nature the very essence of suggestiveness is patent.

(Greenwood 1893: 246)

Introduction

As a venue for understanding learning, museums present unique difficulties. Learning does occur in museums; but unlike formal schooling, work, or recreational pursuits (chess, weaving, etc.), visiting museums is not only voluntary, it usually occurs in family groups who spend only a brief time (for research purposes) on a complex set of activities. In every other activity used as a source of research on learning, the learners engage in the tasks repeatedly and the purpose is usually clear – they wish to become better at what they do, they want to accomplish the activity most efficiently or with least cost, they want to pass an exam, or the activity is a vocation or avocation, something on which they spend considerable time and effort. Little of this applies to museums; even the purpose of the museum visit can be challenged.

Studying learning in museums is limited not only by the short duration of typical visits but also by infrequency of visits. Even dedicated museum-goers, "expert practitioners" (who can be contrasted to "novices"), may visit museums only a few times a year. This is in marked contrast not only to school attendance, but even to the time spent by street vendors, ski instructors, or industrial workers (all subjects of learning research) at their pursuits (Rogoff and Lave 1984). Consequently, our knowledge about learning in museums seems remarkably incomplete. We have many documented instances, but little coherent theory. There is considerable evidence about what visitors do in museums, yet what the results of these experiences are for the visitor is ill-defined.