

Accessing and Incorporating Visitors' Entrance Narratives in Guided Museum Tours



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Abstract Museum visitors arrive at an exhibit or tour with their own individual experiences, memories and knowledge related to the subject—in a phrase, their “entrance narrative.” We tested what happens to participants in guided tours when the guide first accesses—by two different methods—the entrance narratives of their visitors, and then makes specific connections from these entrance narratives to the content of the tour. The subject of the tour was a guided tree walk at Hebrew University’s open-campus museum. Behavioral measures and questionnaires both indicated that accessing and incorporating participants’ entrance narratives profoundly enhanced their experience. The enhancement was somewhat greater among visitors from the general public than among groups of university students. We suggest that guides could use the simple methods described here, in a wide variety of tour types, to enhance visitor experiences.



Although it is well known that visits to museums and related venues can generate rewarding and memorable experiences,¹ positive encounters with museums are far from universal, and may not be the norm. Some people regard museums as generally old fashioned and boring (Freudenheim 2006). Many do not return after an initial visit. Visitors to many types of museum galleries often traverse the exhibits rapidly, at a measured mean rate of 300 square feet of floor space per minute (Serrell 1997). This brings the average visitor through even a substantial exhibit hall (3,000 square feet) in just 10 minutes. Such brief durations hint at limited engagement, reflection, and learning. Many would probably say, then, that museum exhibits just don’t “speak to them.”

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A tour guide leading a group through a museum gallery or other cultural venue has a unique opportunity to engage visitors deeply. Yet here too the potential is not often realized, since many guided tours are pre-planned didactic presentations, with little attempt to actively engage the visitors (Camhi 2008). As with exhibits, then, many visitors might say that the tour guide doesn't "speak to them."

This paper describes research on one way of enhancing guided tours for a wide range of people and providing them with increased opportunities for deep engagement. This research is relevant to tours led by regular or volunteer staff (variously called guides, docents, or interpreters), not only within museums, but at many types of cultural and educational venues, including zoos, botanical gardens, nature centers, local and national parks, historic houses, urban areas, universities and colleges, government facilities, businesses, and others.

Based on visitor studies research (Doering 1999), the following are among the most desired experiences of many museum visitors:

- Encounters with significant display objects;
- Cognitive experiences;
- Introspective perceptions touching personal memories;
- Social engagement.

By engaging in these and other types of experience, visitors have the possibility for "personal meaning-making," and "personal self-definition and development." However, as is clear from research on Multiple Intelligences (Gardner 1983; 1993; Armstrong 2000), constructivism in museums (Hein 1998), and varied learning styles (Kolb 1999), different individuals approach an exhibit or tour in very different ways. An important goal for museums is accommodating this wide range of individual differences.

A concept useful for describing a person's individuality, as it relates to a particular museum exhibit or tour, is the "entrance narrative" — defined as everything in the person's experience that is connected in any way to the subject of the particular exhibit or tour, including reference to the four aspects bulleted above (Doering 1999a; 1999b). It is frequently claimed, though not rigorously tested, that if a museum exhibit provides opportunities for linkage to an individual's entrance narrative, that visitor is likely to have an enhanced experience within the exhibit. This has led increasing numbers of museums to survey potential visitors to a planned exhibit, determine the range of their entrance narratives related to the exhibit's subject, and work these into the exhibit's content, text, design, and other features (Taylor 1991; Dierking and Pollock 1998; Diamond 1999).

Praiseworthy as this is, it is based at best on a statistical sampling; the entrance narratives of the people who will actually attend the exhibit remain unknown. But a guided tour is different. It offers in principle an opportunity to determine the entrance narratives of the particular visitors on the tour — even their specific personal experiences and memories that relate to the subject. We reasoned that doing so, and then incorporating these entrance narratives during the tour itself, should especially create positive visitor experiences. The guide could then incorporate at least some of these entrance narratives into the tour.

An extensive literature exists on techniques of tour guiding, with frequent mention of the importance of connecting the tour to visitors.² Yet we have found no specific mention of any methods by which the guide would access and incorporate the entrance narratives of a tour's participants. (And of course, we have found no research on how effective any such methods might be.) One of the authors (Camhi) observed 35 museum and other tours, mostly in the U.S., and did not find any attempts to identify visitor entrance narratives (Camhi 2008). The only relevant suggestion we have encountered in the literature points to connecting the tour's subject to universal concepts, such as family, peace, love, hate, beauty, and so on, since most people can readily relate to these themes (Brochu and Merriman 2002). The entrance narratives of specific visitors — rich in personal memories and meanings — appear to have been until now *terra incognita*.

We report here on two different ways of accessing the individual entrance narratives of tour participants, and ways that the guide can then incorporate this material into the tour. We present the result of two types of measures of visitor experience — a behavioral checklist and a questionnaire. The results of these two measures indicate that accessing and incorporating visitor entrance narratives strongly enhances the visitor experiences on the tour.

Methods

The research was carried out within the framework of the Discovery Tree Walk of the Nature Park and Galleries, the "open-campus museum" of the Hebrew University of Jerusalem. This one-hour guided tour — whose "Big Idea" (Serrell 1996) is "Trees are big in many different ways" — was led by a museum guide who had already been leading this tour for two years when the research began. In order to limit the variables, we restricted our research to tours led by this one guide, rather than other tree walk guides. Although the guide was not part of the research team, she worked with us in designing the tour to meet the needs of the research.

The guide used two methods for accessing visitors' entrance narratives. The first is termed here "EN mapping." After assembling and greeting visitors, but before setting out toward the first tree, the guide handed out pencils, clipboards, and a piece of paper on which the word "tree" appeared inside a circle. Eight lines projected from the circle like sun's rays, in a deliberately irregular pattern. The visitors were invited to spend up to three minutes jotting down whatever came to mind about trees, including — if they wished — drawings, lines of a poem or song they might know, early life experiences, emotions, and so on. Visitors usually became very engaged in this activity. Families generally did it together in a highly animated fashion. The activity sometimes extended to four or five minutes, after which the guide ended the exercise. She then invited the visitors to share a few of their associations. Not every visitor needed to speak. The objective instead was to get enough people to provide material that the guide could link to objects or experiences along the tour. The visitors handed in their clipboards and pencils.³ The group then walked to the first tree. The EN mapping, including the conversation with visitors, and comments by the guide (see below), usually lasted approximately 6–7 minutes.

The second method is termed here "EN chat." Instead of using clipboards, the guide simply asked the visitors, "When you think of trees, what comes to mind?" If there was little or no response, she offered prompts such as, "Did any of you ever climb a tree when you were young?" Or, "Have you ever planted a tree?" Or, "Do you have a tree you especially like in your garden or near your house?" Usually the initial question, with or without prompts, elicited several responses. The EN chat, and comments by the guide (see below) usually lasted 3–4 minutes.

Using either the mapping or the chat method, the guide followed up on visitors' sharing of their entrance narratives in two ways. First, as soon as a visitor shared his or her entrance narrative, the guide tried immediately to think of a connection to the tour's objects or story line. If she could, she pointed this out to the visitor, in a voice the whole group could hear. (These comments were included in the 6–7 minutes of the EN mapping and the 3–4 minutes of the EN chat methods.) Second, during the tour itself, when the group arrived at the particular relevant place along the walk, she again referred back to this visitor's entrance narrative, again for all to hear, this time making a connection specifically to the particular tree or other aspect of the story. Typically the guide was able to make between three and five such connections on a given tour.

Here's an example of these types of interaction. Several visitors stated that they and their children (or children and their parents) had built a treehouse. The guide's immediate reply would be something like: "Really, how high up was it? What did it feel like up there? What did you do in your treehouse? Well, you might like to keep your eyes open for trees along the way like the one in which you built your treehouse, or trees that would be good places for a treehouse—let us know what you think about this. And by the way, when we get to our Sequoia tree—you see it, over there in the corner of the campus?—do I have a story for you! And for everyone else, too. It's about a young woman who stayed in a kind of primitive treehouse, in a Sequoia tree in California, about 80 meters above the ground—that's about four times taller than the top of this tree over here—and she didn't come down for two years. Not once! Sounds amazing, no? Wait till you hear about it! But if I happen to forget, please be sure to remind me when we get to our Sequoia—I really want you to hear this story."

The guide's comments were intended to achieve the following:

- Strengthen the visitor's memory of the treehouse. (What did it feel like? What did you do?)
- Connect the entire tour to the personal experience of the treehouse builder. (Every tree became a candidate for a match to the remembered treehouse.)
- Turn this visitor into the "expert" about trees suitable for treehouses, reversing the usual guide/visitor role of expertise. (Let us know what you think.)
- Develop expectations. (Not only the treehouse builder, but also other visitors, would be curious to hear about the lady high up in the tree.)
- Transfer partial "ownership" of the tour to the visitors. (The visitor is treated as a client of the guide.)

- Relieve the guide herself of the need to recall this and other visitor entrance narratives. (“Please be sure to remind me” — this greatly simplified her ability to address several entrance narratives during the tour.)

The treehouse example was extreme in terms of the extent to which it was incorporated into the tour. In some other cases, there was little more than adding a comment to a particular visitor about his or her entrance narrative during the tree walk. In some cases, it involved making a slight change in the tour’s route to bring in an object that related significantly to a visitor’s entrance narrative.

We hypothesized that not only the visitors whose shared entrance narratives were incorporated into the tour, but also the others, including those who didn’t express their entrance narratives verbally at all, might have an enhanced experience. By taking the few minutes initially to think back over their own life experiences with trees, these visitors might be more likely to create links to the tour’s content, attend more to the guide’s explanations, and ask more questions than they otherwise would. At the very least, such visitors might be more likely to receive the positive message that the guide is interested in them and their tree experiences.

The two types of tours just described — those using EN mapping and those using EN chat — comprised the experimental tours of this study. In order to determine what effect (if any) these two methods had on visitors, coupled with the effect of incorporating the entrance narratives into the tour, we compared their experiences to those of other visitors on different tours that served as controls. The control tours included no EN mapping or EN chat, nor any other attempt to access or incorporate visitors’ entrance narratives about trees. These control tours, however, were identical in theme, storyline, content, and style to the experimental tours (except, of course, there were no visitor entrance narratives to be incorporated).

In the control tours, the guide took several minutes to relate interactively with the visitors about subjects *not* connected to trees. This occurred at the same moment that she would have applied the EN mapping or EN chat method in the experimental tours. For instance, she would say, “What kinds of museums do you like? Oh yes, I like that one too. Have you been to the...? Have you been to this campus before? Where did you come from today? Was there a lot of traffic?” This usually lasted 3–4 minutes (longer would have seemed unnatural). Although shorter than the duration of the EN mapping method, this line of questioning was about equal in duration to the EN chat. The reason for this tree-neutral banter was to eliminate the possibility that — if the experimental tour visitors had an enhanced experience — this resulted from their enjoyment of their nice, friendly, chatty guide. The guide was equally nice, friendly, and chatty with the control groups — she just didn’t chat about trees. Thus, any enhancement of visitor experience in the experimental tours could be attributed to accessing and incorporating of the visitors’ entrance narratives.

Data collection and analysis — All data was collected during the period 2004–2006. The data sample for the EN mapping method comes from a total of 25 tours — 14 experimental and 11 control — with a total of 162 visitors. On these tours, the group size ranged from 4 to 17 (mean = 6.5). The data sample for the EN chat method comes from a

separate set of 11 tours—5 experimental and 6 control—which involved a total of 114 visitors. On these tours, the group size ranged from 8 to 14 (mean = 10.4).

Demographic makeup of the EN mapping groups and their control groups consisted of three categories:

- 1) The general public, largely families with children (6 experimental and 5 control groups, 54 visitors total, mean group size 4.9).
- 2) First year biology students at the Hebrew University of Jerusalem (4 experimental and 3 control groups, 53 visitors total; mean group size 7.6). Their participation was voluntary, not connected to a course.
- 3) First year students co-majoring in biology plus another subject (4 experimental and 3 control groups, 55 visitors total; mean group size 7.8). Like the above group of students, their participation was voluntary, not connected to a course.

In contrast to the demography of the EN mapping groups, the EN chat groups were made up exclusively of first year biology students at the Hebrew University. Moreover, whereas the first year biology students taking part in the EN mapping groups and their controls did so voluntarily (in 2004), those in the EN chat group and their controls did so as a newly required part of their introductory biology course (in 2005). The significance of these differences is explained below.

As mentioned above, the first author of this study took part as the researcher in each of the tours, along with the guide and the visitors. She remained in the background, and acted in the same manner in both types of tours (experimental and control). She recorded visitor activities and speech, using a checklist. Where necessary, to clarify uncertainties in speech, she referred later to an audiotape recording made during the tour. At the end of the tour, as the guide departed, the researcher handed out questionnaires to the visitors, who returned them to her. The guide did not examine the questionnaires. The visitors were informed that they were taking part in the museum's research, and were told how the data was being collected, but were not informed of the research goals.

The checklist contained statements of eight types of visitor behavior (see Appendix A). Each time any visitor on a tour carried out any of these behaviors, the researcher entered a check beside the relevant statement on the checklist. Checklist statements 1–6 were consistent with positive visitor engagement in the tour, and statements 7 and 8 were consistent with a lack of engagement.

The questionnaire (see Appendix B) was filled out by the university students individually. However, families often filled it out as a group, according to their preference. In the questionnaire, visitors had a chance to relate to the four types of experience (mentioned here in the Introduction) that are thought to be most commonly desired by museum visitors: object encounters (question 10—objects of beauty); cognitive experiences (question 5—learn new things); introspective perceptions (question 11—feelings and emotions); and social engagement (question 8—those you came with, or people you hadn't known). Moreover, the open question number 2 (what the tour "did for you") permitted visitors to express any of these and other categories of experience.

For most tours, the guide, who was bilingual, spoke in Hebrew. In five tours for

the general public, she spoke in English. Visitors were free to speak and write in either language, and the questionnaires were available in, and could be filled out in, either language.

Data was analyzed using non-parametric statistics. For added validity of results, two different statistical tests were employed, namely the Median and Wilcoxon Tests. Out of 196 different statistical comparisons, on only one occasion was there a difference of significance between these two tests. We therefore present only the Wilcoxon p values, and we point out the one test where it indicated significance ($p \leq 0.05$) and the median test did not. (The p values are presented at two-decimal-point accuracy, between ≤ 0.01 and ≤ 0.05 . These values were identical in the two tests in 180 of our 196 statistical comparisons.)

Results

The analysis of the checklists, with data pooled from the three demographic categories (the general public and the two student groups), indicated that for each positive statement on the list (statements 1–6), the experimental groups (the EN mapping groups) had a significantly higher score than the control groups. For each negative statement on the list (statements 7–8), the experimental groups had a significantly lower score than the control groups (Table 1). The same was generally true for each of the three demographic categories analyzed separately (that is, comparing the experimental groups of each demographic category against the controls of the same demographic category), except for statement 8 on the checklist, which gave no significant difference for the two student categories (Table 2).

Table 1. Comparison of checklist results, experimental (EN mapping) groups versus control groups—pooled data from all three demographic categories. For each checklist statement, the table shows the median values among all tours for the experimental and the control groups, and the p values of their comparison.

Checklist Statement	Median (Exp/Control)	$p \leq *$
1. Visitors ask question of guide	25/8	0.01
2. Visitors answer questions asked by guide	18/5	0.01
3. Visitors write down something during tour	4/0	0.01
4. Visitors utter comment about subject of tour	20/6	0.01
5. Visitors converse with one another on subject of tour	12/1	0.01
6. Motor acts related to tour subject	30/14	0.01
7. Visitors converse with one other not about subject of tour	3/3**	0.01
8. Motor acts not related to tour subject	2/5	0.01

* All significant differences ($p \leq 0.01$ through 0.05) in this and subsequent tables were in the direction consistent with greater visitor engagement in the experimental groups.

** The experimental score was significantly lower than the control, even though the medians were the same.

Table 2. Comparison of checklist results separately for the three demographic categories—general public, biology students, and co-majors.

Checklist Statement	Gen. Public $p \leq$	Biol. Stud. $p \leq$	Co-majors $p \leq$
1. Visitors ask question of guide	0.01	0.01	0.01
2. Visitors answer questions asked by guide	0.01	0.01	0.01
3. Visitors write down something during tour	0.01	0.01	0.01
4. Visitors utter comment about subject of tour	0.01	0.01	0.01
5. Visitors converse with one another on subject of tour	0.01	0.01	0.01
6. Motor acts related to tour subject	0.01	0.01	0.01
7. Visitors converse one other not about subject of tour	0.01	0.01	0.01
8. Motor acts not related to tour subject	0.01	ns*	ns

* non-significant difference.

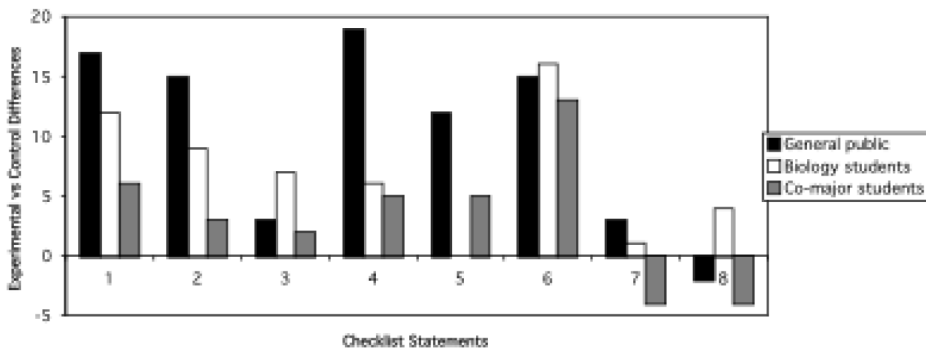


Figure 1. The effect of EN mapping and incorporating visitor ENs on checklist scores, for the three demographic categories.

We next compared more quantitatively the three demographic categories, in terms of the effect upon their checklist scores of accessing and incorporating their ENs. Figure 1 plots the differences between the medians of all experimental groups versus the medians of all control groups, for each demographic category, for each of the eight checklist statements. Almost all the data are positive for statements 1 through 6. Half are negative for statements 7 and 8, confirming the enhanced checklist scores in the experimental vis-à-vis the control groups. In addition, for statements 1, 2, 4 and 5, the general public's scores were particularly elevated vis-à-vis those of the two student groups. (For statements 1, 2 and 4, the differences between the general public and each of the two students groups were highly significant— $p \leq 0.01$ —and likewise for the difference between the general public and the biology students in statement 5. However, for statement 5, the difference between the general public and students co-majoring in biology was not significant: $p \leq 0.07$.) Statements 1, 2, 4 and 5 are the ones that reflect more verbalization about the tour subject in the experimental than in the control groups. Thus, accessing and linking en-

Table 3. Comparison of checklist results for three different group sizes (small groups 4–6 people, medium groups 7–12 people, large groups 13–17 people).

Checklist Statement	Small groups N=31 $p \leq$	Med. groups N=64 $p \leq$	Large groups N=67 $p \leq$
1. Visitors ask question of guide	0.01	0.01	0.01
2. Visitors answer questions asked by guide	0.01	0.01	0.01
3. Visitors write down something during tour	0.01	0.01	0.01
4. Visitors utter comment about subject of tour	0.01	0.01	0.01
5. Visitors converse with one another on subject of tour	0.01	0.01	0.01
6. Motor acts related to tour subject	0.01	0.05	ns
7. Visitors converse with one other not about subject of tour	0.01	0.01	0.01
8. Motor acts not related to tour subject	0.01	0.01	0.01

trance narratives to the tour caused the general public to increase its conversations about the tour subject more than was the case for the student groups.

In spite of the generally lesser effect on the two student groups than on the general public, as seen in figure 1, the experimental versus control differences persisted for all three demographic categories (Table 2). The differences also remained among groups of different sizes, with the exception of one statement, number 6 (Table 3). This was true in spite of the fact that the student groups were, on average, slightly larger than the general population groups.

In analyzing the questionnaires, we began by pooling the data from the three demographic categories, and comparing the scores of the experimental versus the control groups for each of the quantitative questions that both groups were asked (questions 1 and 3–12 — see Appendix B). For each question, the experimental group scores indicated a significantly enhanced experience over that of the control groups (Table 4).

In comparing the results from the three demographic categories, all three were substantially affected by the EN mapping procedure, although for certain questions, each of the two student groups showed no significant difference between experimental and control scores. Also, the p values overall were slightly higher for the biology students than for the general public (Table 5).

In comparing different group sizes, it was clear that this size factor had a greater effect on the questionnaire results than on the checklist results. Five of the questions gave no significant effect for the large groups (Table 6). It is possible that this decrease results in part from a confounding effect: the student groups, which showed somewhat less enhancement than the general public, were also on average slightly larger than the general population groups (see Methods section). The effect of group size (Table 6), however, was considerably greater than the effect of demographic composition (Table 5). This suggests that group size is an independent factor.

It should be pointed out that the designation “ns” in (for instance) Table 6 item 5 (“Learned new things”) in the “large groups” column does not mean that the visitors

Table 4. Comparison of questionnaire results, experimental (EN mapping) groups versus control groups—pooled data including all three demographic categories. For each question, the table shows the median values for the experimental and the control groups, and the p values of their comparison.

Question	Median* (Exp/Control)	$p \leq$
1a. Adults' overall experience	1/2	0.05
1b. Children's overall experience	0/0**	0.03
3. Aroused visitor's interests	1/2	0.01
4. Quality of guiding	1/2	0.03
5. Learned new things	2/2**	0.05
6. Reminded of prior knowledge	2/2**	0.05
7. Desire to learn more	2/3	0.05
8. Satisfying social experience	2/3	0.04
9. Reminded of earlier experiences	2/3	0.01
10. Reveal aesthetic beauty	1/2	0.01
11. Elicit feelings/emotions	2/3	0.01
12. Elicit a sense of the spiritual	3/4	0.01

* The lower the median score, the stronger the response, on a scale from 1 (very good or very much) to 5 (very poor or very little).

** Although the medians were the same, the difference was significant.

Table 5. Comparison of questionnaire results separately for the three demographic categories, general public, biology students, and co-majors.

Question	Gen. Public N=54 $p \leq$	Biol. Stud. N=53 $p \leq$	Co-majors N=55 $p \leq$
1a. Adults' overall experience	0.01	0.05	0.01
3. Aroused visitor's interests	0.01	0.01	0.03
4. Quality of guiding	0.01	ns	0.01
5. Learned new things	0.01	0.03	0.03
6. Reminded of prior knowledge	0.05	0.01	ns
7. Desire to learn more	0.01	0.01	0.05
8. Satisfying social experience	0.04	0.04	0.01
9. Reminded of earlier experiences	0.01	0.01	0.01
10. Reveal aesthetic beauty	0.01	0.02	0.01
11. Elicit feelings/emotions	0.01	0.05*	0.01
12. Elicit a sense of the spiritual	0.01	ns	0.01

* The Median Test gave a non-significant difference (ns) for this datum.

Table 6. Comparison of questionnaire results for three different group sizes; combined data from all three demographic categories (small groups 4–6 people, medium groups 7–12 people, large groups 13–17 people).

Question	Small groups N=31 $p \leq$	Med. groups N=64 $p \leq$	Large groups N=67 $p \leq$
1a. Adults' overall experience	0.01	0.01	0.01
3. Aroused visitor's interests	0.01	0.01	0.01
4. Quality of guiding	0.01	0.01	ns
5. Learned new things	0.01	0.01	ns
6. Reminded of prior knowledge	0.01	ns	0.01
7. Desire to learn more	0.01	0.01	0.01
8. Satisfying social experience	0.02	0.01	0.01
9. Reminded of earlier experiences	0.01	0.01	0.05
10. Reveal aesthetic beauty	ns	0.01	ns
11. Elicit feelings/emotions	0.01	0.01	ns
12. Elicit a sense of the spiritual	0.01	0.01	ns

did not learn new things from the tour. Rather, the experimental groups learned no more new things than did the control groups. The same is true for the other "ns" results.

Male versus female respondents scored similarly on the questionnaire, except for question 11, which showed only women experiencing the elicitation of more feelings/emotions in the experimental than the control tour. Also, among the demographic category of the general public, groups that included at least one child scored similarly to those that included no children.

What did the visitors themselves, in the experimental groups, say about the usefulness of the EN mapping method? When they were asked, "To what extent did writing down your associations with trees, before the start of the tour, help bring you into the tour subject?" 83 percent answered "quite a lot," the second most positive of five possible answers, and 2 percent answered "very much," the most positive of the five. And when asked, "To what extent did writing down your associations with trees, before the start of the tour, increase your interest in the tour?" again 83 percent answered "quite a lot," whereas 4 percent answered "very much." Thus, the visitors' own impression of the usefulness of the EN mapping procedure corroborates the checklist and questionnaire data, both suggesting a strong effect on their experience.

On the questionnaire, item 2 is an open question: "Describe briefly what this tour 'did for you' — that is, what was the nature of your experience on the tour." For purposes of analysis, we divided the entire set of responses into four subsets thought to represent the four categories of museum experience mentioned in the Introduction — objects, cognitive, introspective/memories, and social. (The subdivision into these categories was made by one author and independently by an individual who knew nothing of the nature or purpose of the study. These two subdivisions differed by less than 5 percent.) We

then compared the number of responses in each of the four subsets for control versus experimental groups.

The following are examples from the visitors' responses to question 2, in each of the four subsets:

Objects:

"I discovered special and beautiful trees really close to where I stood."

"I was impressed by the Sequoia."

Cognitive:

"The tour increased my knowledge of trees."

"I got to know trees deeply."

"More knowledge and interest in the nice environment."

Introspective/memory:

"The tour added for me love and worry about trees."

"Now I feel more connected to trees."

"It reminded me of many varied experiences from my youth till now."

Social:

"I was happy to see my kids taking part."

"I was happy to be in a group with my friends."

Grouping the data from all three demographic categories of visitors, only in the introspective/memories subset was there a significant difference between experimental and control groups ($p \leq 0.05$). That is, visitors in the experimental groups mentioned introspective experiences and memories significantly more than did visitors in the control groups. In fact, this difference was significant for each of the three demographic categories considered separately (general public $p \leq 0.01$; and the two student demographic categories $p \leq 0.05$).

We examined in detail the contents of the EN maps that visitors filled out. The main goal was to determine whether—just as the general public groups showed somewhat greater enhancement of experience than either student group—perhaps they also showed a greater involvement, for instance, by filling out the maps in greater detail.

Figure 2 is an example of an EN map filled out in English by a visitor. For each map, we counted the number of words, the number of different statements (usually a given statement was written beside one of the eight rays extending from the central circle), and the number of pictures drawn. We found the following significant differences: The general public both wrote more words and drew more pictures than either student group ($p \leq 0.01$). The general public also wrote more statements than the co-major students ($p \leq 0.01$). The biology students wrote more words than the co-majors ($p \leq 0.04$). Thus, the general public engaged with the EN mapping more fully than either of the other two groups, and perhaps the co-majors did so the least. Possibly, then, the greater effect on the general public groups than the student groups of accessing and incorporating their entrance narratives is related to their greater involvement in the EN mapping process.

Finally, we attempted to determine how robust is the effect of accessing and incorporating the visitors' entrance narratives in enhancing their experiences on the tour. For

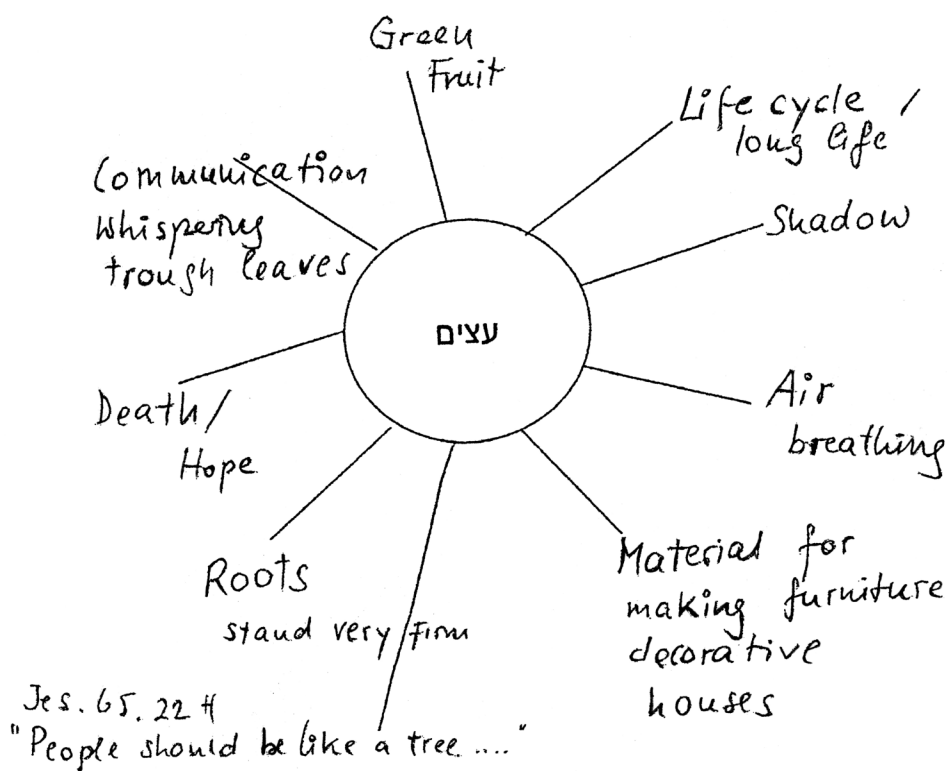


Figure 2. EN map filled out by a general public visitor. The visitor added the long ray at the bottom. The Hebrew word in the circle means "trees."

this purpose, we carried out an additional set of 11 tours, as described in the Methods section, in which we intentionally reduced the likelihood of achieving a significant difference between experimental and control groups. We did this by introducing four factors, as follows:

- 1) We tested only students, specifically biology majors, a demographic category that had shown somewhat less experimental versus control differences than the general public, in the tests already described.
- 2) The group size was larger, on average, than in the previous tests (mean of 10.4 versus 6.5 visitors per group), and we had already seen that larger groups show a lesser experimental versus control difference.
- 3) We tested these students during the second year of our study, when their participation in the guided tree tour had become a formal requirement of their introductory biology course. Thus, these students did not take part in the tour voluntarily, as in the data described above, a factor we predicted would lead to lesser experimental versus control differences.
- 4) The guide used the EN chat rather than the EN mapping method for the experimental groups. (The control groups were treated in the same way as in the earlier

Table 7. Comparison of checklist results, experimental (EN chat) groups versus control groups: biology majors.

Checklist Statement	Median (Exp Control)	$p \leq$
1. Visitors ask question of guide	16/5	0.01
2. Visitors answer questions asked by guide	22/10	0.01
3. Visitors write down something during tour	4/0	0.01
4. Visitors utter comment about subject of tour	8/3	0.01
5. Visitors converse with one another on subject of tour	6/2	0.01
6. Motor acts related to tour subject	40/15	0.01
7. Visitors converse one other not about subject of tour	2/4	0.01
8. Motor acts not related to tour subject	1/4	0.01

Table 8. Comparison of questionnaire results, experimental (EN chat) versus control groups.

Question	Median* (Exp/ Control)	$p \leq$
1. Overall experience	2/3	0.01
2. Aroused visitor's interests	2/4	0.01
3. Quality of guiding	2/2	ns
4. Learned new things	3/3	ns
5. Reminded of prior knowledge	3/5	0.01
6. Desire to learn more	4/5	0.01
7. Satisfying social experience	5/6	0.01
8. Reminded of earlier experiences	3/5	0.01
9. Exposure to beauty and aesthetics	2/3	ns
10. Experience of other students on tour	3/4	0.01

part of the study.) As EN chat involves less visitor investment of action (just thinking about what comes to mind about trees, rather than writing it down on an EN map), and less time (3–4 minutes, rather than 6–7 minutes), we predicted this might decrease the experimental versus control differences.

In spite of these factors, the checklist data from these tours showed highly significant experimental versus control differences (Table 7).

In the questionnaire for this group of students, we made minor changes from the prior version used for the EN mapping groups. We omitted question 12, whose answer by biology students had been non-significant, and question 11, whose answer by these students according to the Median Test had been non-significant. We replaced these two questions with a single one: "Rank the experience that you judge other students, besides yourself, had on your tour." We also omitted question 2 of the original questionnaire, namely the open question. Finally, we expanded the scale of answers to range from 1 — very good or very much — to 10 — very poor or very little. As Table 8 shows, seven out

of the 10 questions on this questionnaire gave a significant difference between experimental and control groups.

Overall, then, in spite of our having intentionally reduced the likelihood of achieving experimental versus control differences, these differences persisted for most items tested. This points to the robustness of the effect of accessing and addressing visitor entrance narratives during the guided tour.

Discussion

The impetus for this study was three-fold.

- 1) A group of well-known studies indicated that when visitors come to a cultural experience such as a museum exhibit or a guided tour, they bring with them a rich body of personal experiences, which we refer to here as their entrance narrative (Doering 1999).
- 2) By accessing the entrance narratives of potential visitors, and using this material in the development of an exhibition, a museum apparently can enhance visitors' experiences (Taylor 1991; Dierking and Pollock 1998; Diamond 1999).
- 3) It occurred to us that a tour guide has a particularly great opportunity, though one rarely exploited, to access visitor entrance narratives and incorporate these into the tour—a process we presumed might enhance their experience.

Although we anticipated a positive effect, we were totally unprepared for the magnitude and robustness of the effect we obtained. In all cases, the differences found between experimental and control groups were consistent with achieving an enhanced tour experience for the visitors in the experimental groups vis-à-vis the controls. Indeed, we interpret these effects as clear signs of enhanced visitor experiences, for the following reasons:

- The effects were of two different types—behavioral measures using the checklist, and self-reporting of visitor experiences using the questionnaire—which corroborated one another.
- The questionnaire sampled reactions to four categories of experience—object, cognitive, introspective/memory, and social—that were thought to be most commonly sought after by museum visitors (Doering 1999b).
- Among the visitors who experienced the EN mapping method, 87 percent said it helped bring them into the subject of the tour, and 85 percent said it increased their interest in the tour.
- The general public tended to write more on their EN maps (that is, took greater part in the EN procedure), and tended to show greater experimental versus control differences.

For reasons of consistency, we chose to restrict our study to a single tour topic, and tours led by a single guide. To what extent would tours on other subjects (and led by other guides) respond similarly to the EN methods? We are unaware of anything special about the subject of trees that would influence the outcome of the EN methods. Most visitors to tours on most subjects probably have some personal experience related to those subjects. There hardly seems a subject to which one has no connection at all. Thus, it appears likely that the effect we have obtained would be universal, or nearly so. Likewise, we believe there is nothing about our particular guide that influenced the outcome of this study. We suggest, then, that the approach described here should be applicable to a wide variety of tour subjects and guides.

The intention of the checklist was to determine the visitors' general behavior. We did not attempt to determine specific categories of behavior, such as the subjects of their conversations, except to ask whether they had something or nothing to do with the tour's subject. Rather, the checklist recorded the visitors' general engagement in the tour. The questionnaire, though, did relate to the different types of experience, including the four mentioned above — object, cognitive, introspective/memory, and social experiences.

Summarizing and interpreting the main results, the checklist indicated that groups experiencing the EN mapping method showed greater engagement in the tour than control groups, irrespective of their demographic category or group size (although both student groups showed a somewhat lesser effect than general population groups). The questionnaires showed that groups involved in the EN mapping method had experiences that were enhanced in several different ways, compared to control groups (including object, cognitive, introspective, and social experiences). Interestingly, though, the visitors themselves reported an increase only in the introspective/memories category, based on their answers to question 2. Enhancement of the experimental groups' experiences was seen for each demographic category, three different group sizes, male and female respondents, and groups with or without children. The most notable limitation to the enhanced experiences was seen for the largest groups. Overall, the enhancement of experience was profound. In fact, this enhancement remained largely intact even when we modified the procedure by four factors, each likely to reduce the enhancement — including the use of the EN chat, rather than the EN mapping method.

One can divide the EN methods used here into four sequenced parts:

- 1) The visitors access their own entrance narratives.
- 2) The visitors share their entrance narratives with the guide and others.
- 3) The guide responds immediately, where possible, connecting an entrance narrative to something the visitors will see or experience on the tour.
- 4) The guide makes the connection, during the tour itself, between a visitor's entrance narrative and an object or a part of the story.

We recognize that parts 3 and 4 above can present challenges, especially for a new guide. Indeed, some guides we have trained in this method tend to leave off part 4, or both 3 and 4 — the very parts that connect the visitor to the tour. We were told by our

guide, however, that not far into this study, she was hearing few entrance narrative subjects she hadn't already heard. She was thus able to recognize almost immediately which visitor entrance narratives could be connected to which parts of the tour. Whereas guides might find these procedures initially somewhat daunting, early difficulties are likely to fade rather quickly with experience.

How effective is the EN chat method, as compared to EN mapping? A direct comparison is difficult because we carried out the EN chat under less favorable conditions than EN mapping—namely, with biology students who took part in the tour as a course requirement, rather than by the free choice of a wider visitor population. In fact, we assumed that the EN chat, which required less time and energy investment by the visitors, would be less effective than EN mapping. Our use of this method was part of our strategy to impose hindrances in order to test the robustness of the general process of accessing and linking entrance narratives to the tour. We were surprised that in spite of these hindrances the results of the EN chat came out so positive. This might suggest that the EN chat, employed under more favorable conditions (with free choice visits, for instance) could be quite effective. This is significant, since we believe that not every guide will be naturally inclined to use the more cumbersome and time consuming EN mapping method. EN chat, by contrast, is quick, simple, and as we discovered, effective.

As mentioned in the Introduction, attempts by museums to incorporate elements from visitors' entrance narratives into an exhibition are restricted by the statistical nature of sampling future visitors to the exhibition. Given the strongly positive effect shown here of accessing and incorporating entrance narratives of visitors into guided tours, museums may wish to consider making such tours more available in their key exhibitions. In our experience, guided tours as now presented in most museums generally make no attempt to access visitor entrance narratives (Camhi 2008). Perhaps if they were to do so, the degree of engagement in the exhibition would be significantly enhanced for visitors who choose a guided tour.

A further possibility would be for visitors to a museum exhibition to enter their entrance narrative into a computer just before they begin to view the exhibition on their own. This could be done in the form of keywords. The computer would respond with a set of "don't miss" or "especially for you" pointers relevant to that visitor. More information on these specific subjects could be offered, and follow-up readings and activities could be suggested. Though less personalized than the guided tour, this could be a useful option, and might well be worth a try.

Notes

1. See Anderson and Piscitelli (2002); Falk and Dierking (1997); Spock (2000a; 2000b); Wolins, Jensen, and Ulzheimer (1992).
2. See Mills (1920); Tilden (1957); Lewis (1980); Grinder and McCoy (1985); Ham (1992); Regnier et al. (1992); Levy et al. (2001); Brochu and Merriman (2002); Beck and Cable (2002); Knudsen et al. (2003); Cunningham (2004); NIW Interpretive Sourcebooks (1995–2005),

3. They had been handed out by (and were returned to) the researcher, who is the lead author of this paper.

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Appendix A

Checklist of Visitor Behavior During the Tour

1. A visitor asks a question of the guide.
2. A visitor answers a question asked by the guide.
3. A visitor writes down something during the tour [not including notes made on the EN mapping page or the questionnaire; this required that the visitor have a writing implement and paper].
4. A visitor utters a comment related to some subject on the tour, but not addressed to any specific person.
5. Visitors converse among one another on the subject of the tour [each such conversation was recorded by a single check, irrespective of the number of participants — which, however, was usually two].

6. A visitor carries out a motor activity related to subject of the tour [for instance, picking up a pine cone from the ground, feeling a tree's bark, smelling its flowers].
7. Visitors converse among one another on a subject *not* connected to the tour.
8. A visitor carries out a motor activity *not* related to the subject of the tour [for instance, throwing a ball, making a call on a cell phone].

Appendix B

Questionnaire [paraphrased]

(Note: where rankings are requested, or where asked "to what extent..." the possible answers were any number from 1 to 5):

1. Rank the quality of your overall experience on the tour.
2. Describe briefly what this tour "did for you" — that is, what was the nature of your experience on the tour.
3. Rank the degree to which the tour aroused your interest.
4. Rank the quality of the guiding.
5. To what extent did you learn new things on the tour?
6. To what extent did the tour remind you of things you already knew?
7. To what extent did the tour make you want to learn more about trees or related subjects?
8. To what extent did the tour provide you with a satisfying social experience with those you came with, or people you hadn't known?
9. To what extent did the tour remind you of earlier experiences connected to trees or other subjects?
10. To what extent did the tour reveal to you aesthetic beauty?
11. To what extent did the tour elicit from you feelings and emotions?
12. To what extent did the tour elicit from you a sense of the spiritual?
- 13a. To what extent did writing down your associations with trees, before the start of the tour, help bring you into the tour subject? [This question, and 13b below, appeared only on the questionnaires for the EN mapping experimental groups.]
- 13b. To what extent did writing down your associations with trees, before the start of the tour, increase your interest in the tour?
14. [Demographic data was requested: gender for all groups, age and educational background only for general population groups.]