

Ocean Views: A Study of Visitors to the *Ocean Planet* Exhibition

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Background

The exhibition *Ocean Planet* was presented at the National Museum of Natural History from Earth Day (April 22) 1995 to the end of April 1996. The purpose of this study was to measure the degree to which the exhibition's message was communicated to visitors and the extent to which the exhibition goals were realized.

As expressed by the exhibition's curator, the message of the exhibition was that: *All of our lives rely upon healthy oceans and our actions on land affect the health of the oceans.* Her goals for the exhibition, in her own words, were as follows:

"The goal of the exhibition is to] reinforce or validate visitors' general knowledge of ocean issues, and help them understand the wide range of issues that affect the health of the oceans. For example, in the 1993 study most people would respond to questions about the health of the oceans by mentioning pollution or oil pollution.¹ We hoped that a visit to the exhibition would familiarize visitors with a variety of types of pollution as well as other threats.

We hoped that validation of ocean conservation issues would reinforce visitor interest and concern, making them more likely to make environmentally sound decisions or participate in ocean conservation activities if the opportunity arose. For example, after a visit to the exhibition visitors might be more

likely to pay attention to news stories about the oceans or participate in conservation-related activities."

The Exhibition

Visitors entered the 6,000-square-foot exhibition through the *Immersion* section and encountered a room filled with information about ocean exploration and discoveries. The *Ocean Science* section featured, among other things, a video dive to the bottom of the Caribbean Sea in the Johnson Sea-Link submersible. From this room visitors moved into the *Sea People* section, a room devoted to seafaring communities, their knowledge and legends of the sea, and the risks of seafaring. The central element in the display was the Sea Album video of these communities.

The next room they entered, the *Sea Store*, presented products and resources the oceans provide, everything from fish and transportation highways for ships, to medicines and carrageenan, a seaweed protein used to manufacture ice cream. This section contained a large interactive station, the Product Pyramid, which showed visitors the hidden sea ingredients in common consumer products.

After leaving the *Sea Store*, visitors entered the *Oceans in Peril* section. This section was organized around five life-sized buoys, each containing information about four related ocean problems. The final room, *Reflections*, presented visitors with a jeweled Sculpture Globe and asked them to reflect on how their actions affect the health of the oceans and how they might change their activities to help protect the oceans. This room also contained some computer interactive stations.

Methods

The *Ocean Planet* study was conducted over two weeks in the summer and two weeks in the autumn of 1995. Personal interviews were administered by trained, professional interviewers to two separate samples, a representative sample of entering visitors and a representative sample of exiting visitors. Interviewing periods were coordinated so that the entrance and exit samples did not include any of the same visitors. All times and days of the week were covered equally. Four hundred and six interviews were completed in the Entrance Survey and 572 were completed in the Exit Survey. The overall response rate was 83 percent. No statistically

significant differences were found for any of the demographic or visit variables when the Entrance and Exit Survey data were compared (chi-square, $p \leq .05$). The personal interviews were supplemented by a Tracking Study using an 8-cell quota-sample design, which was conducted during the same period as the surveys.²

Data for assessing the effectiveness of the message communication were collected by asking all intercepted visitors the following open-ended questions: "Can you describe how, if at all, oceans affect your daily life?"; "What do you think are the most serious problems affecting oceans?"; and "Anything else?". Data for further evaluating exhibition goals came from: "What do you think someone like you can do to help solve ocean problems?"; and "Anything else?". All visitors were also asked: "Using a scale from 1 to 10, where 1 means 'dismal' and 10 means 'bright,' how would you rate the future of oceans?"

Visitors interviewed in the Exit Survey were asked the following additional questions: "What did you find most interesting in this exhibition?" "Why?" and "Was there something that moved you in the exhibition?"

Results

Entrance and Exit Surveys

Answers to the question, "Can you describe how, if at all, oceans affect your daily life?" were analyzed in nine categories: products/extraction, use, ecosystem, does not affect life, conservation, aesthetics/beauty, other, everything, and don't know (Figure 1). Only three of these categories showed statistically significant differences between the Entrance Survey and the Exit Survey³: products/extraction, mentioned by 43 percent of entering visitors and 55 percent of exiting visitors surveyed, chi-square (1, $N = 978$) = 13.68, $p < .001$; does not affect life, mentioned by 21 percent of entering visitors and 13 percent of exiting visitors surveyed, chi-square (1, $N = 978$) = 11.13, $p < .001$; and conservation, mentioned by three percent of entering visitors and 10 percent of exiting visitors surveyed, chi-square (1, $N = 978$) = 17.65, $p < .001$.

In other words, we conclude that the exhibition increased by more than one-fourth the substantial proportion of visitors who thought that the oceans affect their lives through its products. It reduced by one-third the small number of individuals who did not think that the oceans affected

their lives. Finally, the exhibition increased the very small percentage of visitors who felt that oceans affect their lives through conservation issues.

Answers to the question, "What do you think are the most serious problems affecting oceans?" were analyzed in seven categories: pollution, exploitation of resources, human actions, extinction, ecosystem problem, other, and don't know (Figure 2). Only one category showed a statistically significant difference between Entrance and Exit: human actions were mentioned by 13 percent of entering visitors and 28 percent of exiting visitors, chi-square (1, $N = 978$) = 31.37, $p < .001$. In other words, instead of seeing ocean pollution and exploitation in a vacuum, more visitors interviewed in the Exit Survey were apparently placing these problems within a context that accentuated human responsibility for the situation.

Answers to the question, "What do you think someone like you can do to help solve ocean problems?" were analyzed in eight categories: individual action, educate oneself/others, change consumption, stop pollution, clean up, nothing, other, don't know (Figure 3). Two of these categories showed a statistically significant difference between Entrance and Exit: change consumption, mentioned by 14 percent of entering visitors and 27 percent of exiting visitors, chi-square (1, $N = 978$) = 23.69, $p < .001$; and don't know, mentioned by 12 percent of entering visitors and eight percent of exiting visitors, chi-square (1, $N = 978$) = 4.35, $p < .05$.

The exhibition seems to have nearly doubled the number of visitors who thought they could help by changing their patterns of consumption and it reduced by one-third the small number of visitors who did not know what they could do for the oceans.

Comparison of the scaled scores on the future of the oceans showed a small but statistically significant difference between the average score of entering visitors ($M = 5.4$, $SD = 2.2$) and the average score of exiting visitors ($M = 4.9$, $SD = 1.9$), $t(978) = -3.2$, $p < .01$. In other words, visitors left slightly less optimistic than when they entered (Figure 4). The largest difference was found at the top of the scale. Eight percent of entering visitors but only two percent of exiting visitors gave the maximum optimistic rating of ten.

Three of the 61 exhibition elements, the Product Pyramid (10%), the Sea-Link video sequence (7%), and the Sculpture Globe (5%) were cited by at least five percent of exiting visitors when asked, "What did you find most interesting in this exhibition?". The answers to the follow-up question -- "Why?" -- suggest the Product Pyramid was interesting

primarily because it showed visitors how many products came from the ocean (45% of reasons), the Sea-Link video was viewed generally as a new or positive experience (51% of reasons), and the Sculpture Globe was appreciated primarily for aesthetic reasons (27% of reasons).

Two exhibition elements, Marine Debris (7%) and the Sculpture Globe (7%) were cited by at least five percent of exiting visitors when asked, "Was there something that moved you in the exhibition?". The Marine Debris panel showed a photograph of a baby sea lion strangled by plastic debris.

Tracking Study

Because of the quota sampling method, the results from the Tracking Study are not representative of all visitors and should be taken only as approximations. The 246 tracked visitors spent an average of 11 minutes in the exhibition rooms ($SD = 10$); the middle 50 percent stayed between four and 13 minutes. Of these 11 minutes, visitors spent an average of eight minutes viewing the exhibition materials and displays ($SD = 9$) at an average of 11 stops ($SD = 8$). The rest of the time was spent moving through the exhibition or engaging in personal activities.⁴ The middle 50 percent stopped between five and 14 times during their visit to *Ocean Planet*.

The three locations with the highest number of stops were the Product Pyramid — stopped at by virtually all of the visitors (92%) in the Tracking Study — the Sea-Link video (48%), and the Sea Album (48%).

Discussion

We can link some of the differences between the Entrance Survey and Exit Survey to the exhibition elements that visitors considered most interesting and most moving, as well as to the tracking results. We believe, for example, that the increase in the proportion of visitors who said that oceans affect their lives through products, and the increase in the proportion of visitors who said that they could help the oceans by changing consumption, can both be attributed to the drawing power and popularity of the Product Pyramid. The emotional impact of Marine Debris may also have contributed to the increase in the proportion of visitors who felt that human actions were a source of ocean problems.

The impact of the Sea-Link video is less clear. Although it attracted a relatively large segment of the audience, it may not have influenced the central issues of how oceans affect our lives and the dangers oceans face. We also do not know the effect of viewing the Sea Album video, another popular stop. It is quite possible that there were other exhibition effects that were not measured in this study because they did not directly relate to the messages or goals of the curator or because they could not be captured by our questions.

Implications

The overall magnitude of changes in opinion brought about by the exhibition seems to be relatively small. No category of response changed by more than 15 percent of visitors between the Entrance Survey and the Exit Survey. We cannot label that degree of change as either a good result or a bad result without knowing the degree to which movement is possible in a self-selected population of museum visitors of this kind.

Note, however, that if we had not conducted an Entrance Survey separate from the Exit Survey, the situation would have seemed very different. The Exit Survey results by themselves would have suggested that the exhibition communicated its message with a very high level of effectiveness. Unless we know the level of knowledge that visitors bring into an exhibition, asking them what they know when they leave cannot reveal how well the exhibition communicated.

The need for both entrance and exit studies raises serious questions about resources. It is twice as expensive and time-consuming to conduct both entrance and exit surveys as it is to do only an exit survey. Even this study, which was relatively well-funded, had to use a quota sample in tracking due to financial limitations. As a result, our tracking data were not representative and could not give clearer answers to the question of how the drawing power of individual exhibition elements influenced or failed to influence opinions.

The results of this study also seem to suggest that communication effectiveness and changes in attitudes and knowledge, while both obvious potential outcomes of exhibitions, may not capture fully the benefits visitors gain from the exhibition experience. If we grant that the people who visit a particular exhibition are usually those with a prior interest in the subject, we quickly realize that these individuals are not very likely to either gain significant new information or to have their views changed as

the result of their exhibition experience. They are more likely to want their existing ideas confirmed, reinforced, enhanced, and validated. Yet evaluation studies of exhibitions rarely address these issues. We need to give further thought to the problem of how to assess and, perhaps, how to value the kind of emotional and intellectual condition described by responses such as, "it made me think".

References

- Bickford, A. (1993). *Visitors and ocean issues: A background study for the National Museum of Natural History Ocean Planet exhibition* (Report No. 93-7). Washington, DC: Smithsonian Institution.
- Bickford, A., Pekarik, A. J., Doering, Z. D., & Yalowitz, S. S. (1996). *Ocean views. A study of visitors to the Ocean Planet exhibition at the National Museum of Natural History* (Report No. 96-5). Washington, DC: Smithsonian Institution

Footnotes

¹ The Institutional Studies Office conducted this background study. Bickford (1993) describes the results.

² A quota sample contains equal numbers of visitors with a given set of characteristics, in this case equal numbers of men and women among: single adults, two or more adults, adult(s) with child(ren), child(ren) with adult(s). The quota-sample method is used to highlight any hypothesized differences among visitors with these characteristics.

³ The chi-square test was applied separately to each category: mentioned vs. not mentioned, Entrance Survey vs. Exit Survey

⁴ A stop was defined as a pause of three or more seconds.

Author Notes

This paper is based on Bickford, Pekarik, Doering, and Yalowitz (1996), available from the Institutional Studies Office, Smithsonian Institution [900 Jefferson Drive, SW; Washington, DC 20560. Tel: (202)786-2289].

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Figure 1
How Oceans Affect Visitors' Lives, by Interview Survey
 Entrance and Exit Surveys separately, Entrance N=406, Exit N=572
 (In percent of visitors in each survey who gave each response)

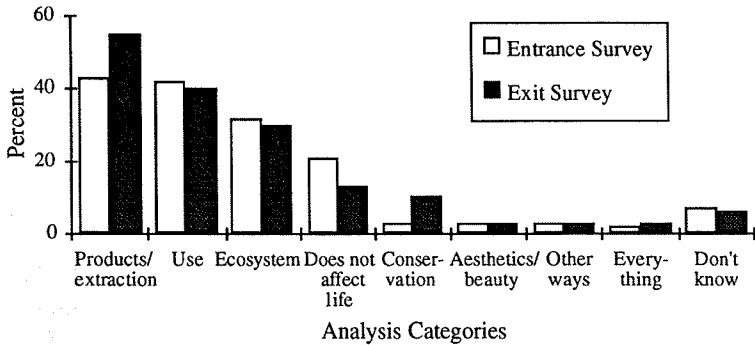


Figure 2
Most Serious Problems Affecting Oceans, by Interview Survey
 Entrance and Exit Surveys separately, Entrance N=406, Exit N=572
 (In percent of visitors in each survey who gave each response)

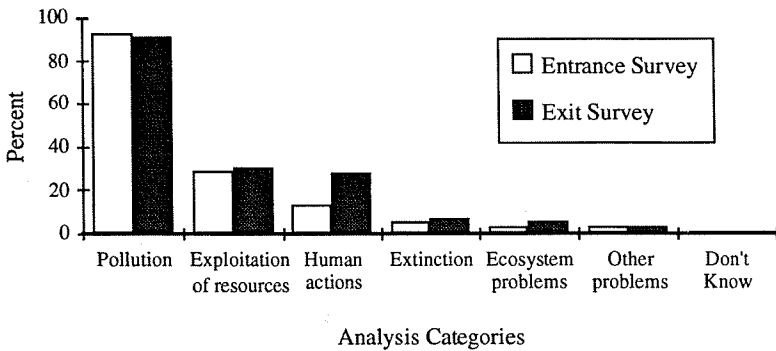


Figure 3
How Visitors Can Help Oceans, by Interview Survey
Entrance and Exit Surveys separately, Entrance N=406, Exit N=572
(In percent of visitors in each survey who gave each response)

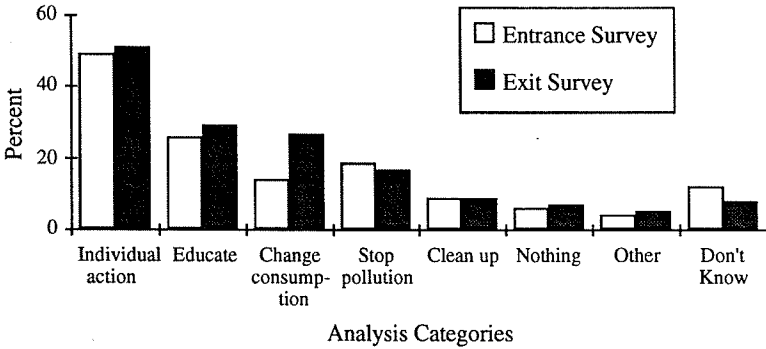


Figure 4
Visitor Rating of the Future of the Oceans, by Interview Survey
Entrance and Exit Surveys separately, Entrance N=406, Exit N=572
(In percent of visitors in each survey who gave each response)

