

Whole Museum Exit Interview Study (EIS)

Final Report

**for the Natural History Museum of Utah
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“It reminded me of how fun learning is,
how many people smile here and talk in
amazement at what they learned, adults and
kids alike.”

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PART 1. INTRODUCTION

1.1 INTRODUCTION

The new Natural History Museum of Utah (NHMU) opened in November 2011, with a total of 51,270 square feet of public interpretive space. In 2012, NHMU began a multiphase evaluation process to help museum staff understand the experiences visitors have during their visits to the new building. The overall purpose of the research is to assess the degree to which the museum is meeting visitor needs and is having the desired impacts, so that future decisions will increase the likelihood that visitors will return and will develop long-term relationships with the institution.

The Whole Museum Exit Interview Study (EIS) is the third in the series of studies focused on the experiences visitors have in the whole museum. In this study we sampled casual visitors to the NHMU to explore the following questions:

- After a visit, what did visitors remember and find meaningful in the exhibitions?
- To what extent did they perceive and make sense of the educational concepts and communication goals set out by the museum?

The EIS was primarily a qualitative study, in which data collectors asked visitors to participate in one of two procedures to reflect on their visits. We administered 63 written Cued Questionnaires (CQs) and 30 face-to-face Exit Interviews (EIs) for a total respondent sample of 93. The study was conducted between December 12 and December 17, 2013. (The methods and the demographics of the 93 subjects are described in later chapters of this report; for methods, see page 11; for demographics see page 19.)

Why we did this study

Previously completed studies at NHMU—the Whole Museum Stay-time Study (STS) and Whole Museum Tracking Study (WMTS)—created a set of data about visitor behaviors for the whole museum. The first stage of the program, the Stay-Time Study, collected data on 418 general visitor groups regarding the total time they stayed during a single visit to the museum. In the second stage of the program, the Whole Museum Tracking Study (WMTS), we tracked and timed 100 general visitor groups to find out where they went, how long they spent, and what they did during their whole visit, and then administered a brief exit interview.

These studies gave us useful information about different demographic groups as well as other trends in the way visitors used the museum.

- Visitors in both studies stayed an average of 1 hour, 53 minutes at the museum.
- Visitors tended to visit most of the museum, whether they started from the top or the bottom of the exhibit pathway.
- Throughout the museum, the most common behaviors were both exhibit-related and social behaviors—using interactives, talking, reading, and pointing.
- Many repeat visitors (who were more likely to come with kids, be members, and read less) knew what they wanted to see; they spent a longer or shorter time depending on their motivations that day.

- Many visitors, especially first-timers, had wayfinding issues.
- Visitors perceived the museum to be about dinosaurs, Native Americans, geology, and nature, often as seen through a lens unique to Utah; many praised the flow of interrelated exhibitions and the connection with the landscapes indoors and out. The themes of evolution, ecology, biodiversity, and sustainability came through in a few of the visitors' words.

These findings helped us formulate questions and strategies for the present, more probing exit interviews and questionnaires concerning what visitors recalled and found meaningful in their museum visits.

Foundation of the EIS

The Natural History Museum of Utah is an impressive blend of architecture, experiences, and content. It was planned as a suite of six interrelated galleries, with views inside to the central *Canyon* (lobby) and outside to the surrounding landscapes. The six galleries—*Sky, Life, Land, First Peoples, Great Salt Lake, and Past Worlds*—are spread over four levels of the building. (See Figure 1.) Together, the galleries and the overall experience are intended to carry the themes and messages the museum wants to communicate. Because of this design foundation and because we knew that visitors tended to see most of the museum on a single visit, we focused this third study once more on the whole-museum visit.

The study posed two questions:

Question 1: After a visit, what did visitors remember and find meaningful in the exhibitions?

Question 2: To what extent did visitors perceive and make sense of the educational concepts and communication goals set out by the museum?

The two questions represented two different perspectives—a “visitors’ perspective” and a “thematic perspective.” They were addressed separately by the two open-ended questioning techniques used in the study.

Question 1—the visitors’ perspective—was addressed with the Cued Questionnaire (Serrell 1998). The CQs asked visitors to write down in their own words what they noticed or were thinking about after their visit to the museum.

Question 2—the thematic perspective—was addressed with the Exit Interviews. In the EIs, data collectors carried out face-to-face interviews with visitors, presenting them with four themes that the museum most wanted to communicate. They asked visitors to select one or two of the themes and talk about where in the museum they might have seen evidence for the themes that day.

By approaching this study from both “directions,” we hoped to get a more thorough picture of what visitors found meaningful, and whether they encountered and understood the themes considered important by the museum.

See Results at a Glance on 10 for a brief summary of the main findings. Details of the findings including the demographics of the sample are in the full report that follows this section.

Description of the report

This report, the Exit Interview Study, describes the results of our two different open-ended study techniques: Cued Questionnaires and Exit Interviews. The subjects who took part in each technique may be referred to as CQs or EIs, subjects, or respondents.

The report has three main parts:

Part 1 INTRODUCTION describes the methods and techniques used for data collection and analysis, summarizes the museum's communication intentions, and reviews the demographics of the sample. A brief summary of the study findings (Section 1.2) may be found on page 10.

Part 2 FINDINGS presents the findings in detail. They are summarized in sections according to the technique used. Section 2.1 describes results from questions unique to the CQs; Section 2.2 describes results from questions unique to the EIs; Section 2.3 describes results from two questions asked in both the CQs and the EIs.

Part 3 DISCUSSION AND RECOMMENDATIONS discusses the results and offers overall recommendations and next steps.

Recommendations are also made throughout the report for how the museum can use the EIS data to build on and improve visitor learning outcomes. Recommendations are always indicated by bullets.

The main findings of the study are contained in visitors' own words, so respondents are quoted throughout. Visitor statements are always in quotation marks; numbers in brackets that follow the quotes indicate the ID number of the subject and which of the two techniques the subject participated in (e.g., CQ22 or EI23). Separate sequential numbering was applied to the respondent set for each technique: Cued Questionnaire subjects are identified by numbers CQ1 through CQ63 and Exit Interview subjects are identified by numbers EI1 through EI30.

Quotes taken from the Cued Questionnaires contain the entirety of each response in visitors' own written words. Since the Exit Interviews consisted of open-ended discussions between data collector and respondent, relevant quotes consist of selected portions of the broader conversation. In both cases, abbreviations, spelling, and punctuation were smoothed out to assure reading clarity.¹

¹ Because of the open-ended nature of the Exit Interviews, the decision was made to quote some respondents at length in order to give the full flavor of what different people said. In those cases, be aware that it's probably not necessary to read every quote provided in order to understand the point being made! You can return to specific sections at your convenience.

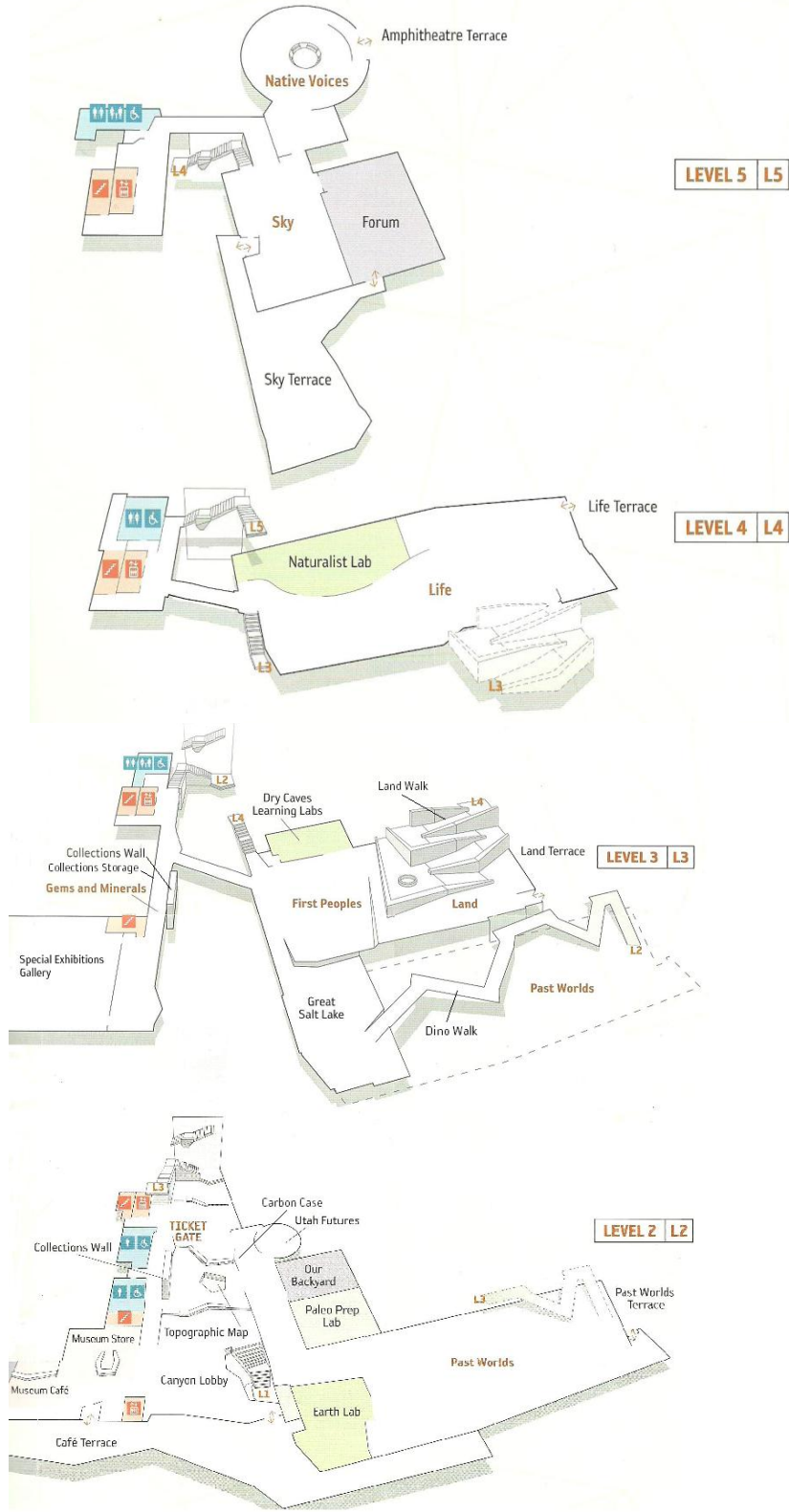


Figure 1. Floor plan of the major exhibition spaces of the museum.

In this study we asked subjects questions about what they had seen and done on their visits to NHMU, so the report refers often to the different exhibits in the museum. The following galleries are mentioned, reading from Level 5 down to Level 2: *Sky, Native Voices, Life, Land, Gems, Collections Storage, First Peoples, Great Salt Lake, Past Worlds, Our Backyard, Utah Futures, Canyon*. See the museum's floor plan (Figure 1 on the facing page) for additional details.

Italics are used for the names of exhibit galleries, to designate official statements of museum intent (such as the mission statement), or to indicate the specifically worded questions used on either the CQ or the EI.

Photographs are captioned but not numbered. Most were taken by the authors of this report or from Internet open sources.

We use the following abbreviations in the report:

- DC: Data collector
- F: First-time visitors
- R: Repeat visitors
- AK: Adults who visited with kids
- AO: Adult-only groups
- Researchers or evaluators: Members of the Serrell & Associates team

"I saw evidence for the ecology theme in the biology area with DNA strands, and all the plants and animals. It reminded me of biology class – I'm a nurse so I've had a lot of them! It's like a text book come to life. So you've read about keratin and the different things, but then to have all the animals right there, it felt like a text book opened up. It's just neat – beautifully displayed."

1.2 RESULTS AT A GLANCE

This section presents brief highlights of the results of the Exit Interview Study (EIS). Readers are encouraged to examine the detailed results in Section 2, and review the full discussion of the results in Section 3.

- The EIS recruited 93 subjects from among general visitors to the Museum between December 13 and December 17, 2013. Demographics of the EIS sample indicated a slightly larger proportion of repeat visitors than in the previous two whole-museum studies (STS 2012 and WMTS 2013).
- “Change” was the most commonly mentioned theme in the subjects’ answers, whether in describing the purpose of the museum’s displays (Section 2.1), in discussing the themes (Section 2.2), or in considering humans’ place in nature (Section 2.3).
- Remarks about Utah were common in responses to almost every question. The focus on Utah seemed to give respondents accessible and memorable stories in which to root their experiences. Many also referred to experiences they had had previously and/or hoped to have in Utah’s natural areas.
- Responses about past and present human cultures came through consistently as subjects described the purpose of the museum’s displays, things they learned or were reminded of, and the place of humans in the natural world. But humans were rarely mentioned in relation to any of the museum’s themes that were tested (ecology, evolution, Utah change, and research), except for the exhibit of hominid skulls as evidence for the evolution theme. (Section 2.2)
- Subjects made personal connections throughout their experiences in the museum, being reminded of feelings, activities, places, people, and actions they hoped to take, whether in Utah or at home. (Section 2.1)
- As in previous studies, the whole museum experience—including the exhibits and exhibit pathways, the architecture, and the setting—played a role in respondents’ discoveries of the storyline and content.
- The museum’s interactive approach continues to engage children and adults alike. In response to questions about the museum’s purpose and themes, new things they learned, and ideas they recalled, many talked about interactives they engaged with, rather than about the content.
- Many respondents also touched on ways that the museum provides unique affordances for learning, such as by offering things usually seen on TV or in books, or by providing a chance to grasp the sizes and shapes of real things. Some felt that the fact that the museum continues to research dinosaurs and other subjects adds to the unique opportunity presented.
- As we found in the previous studies, challenges for visitors’ wayfinding can interfere with their perception of the interconnected story of geological change and evolutionary biodiversity being told at NHMU.

1.3 METHODS

The Whole Museum Exit Interview Study aimed to explore cognitive and affective outcomes for visitors in NHMU's permanent exhibit halls. Data collection took place between December 12 and 17, 2013. Researchers selected this time frame to avoid coinciding with any special exhibits. Since the main focus of the study was on visitors' experiences within the permanent galleries of the museum, researchers felt that the availability of a special exhibit would divert respondents' attention from the suite of permanent exhibitions.

Recruiting and sampling

Visitors were recruited and the procedures were administered in the *Canyon* area, east of (inside) the ticket-takers' gate. This area offered a quiet location with comfortable seating and simplified the data collection process in this complicated building; when being recruited, visitors could see exactly where they were to meet us at the end of their visit. In addition, the area is at a crossroads between elevators and stairs through which most visitors must pass on their way into and out of the exhibition area; recruits could see the study taking place as they passed by, making it less likely they would leave at the end of their visit without talking to us.²

Data collectors approached visitors as they left the ticket-takers' gate and said: *Hello, we are doing a special survey of people visiting the museum today. The museum would like to find out what visitors recall and find meaningful during their visit today. Would you be willing to help out by taking 5-10 minutes at the end of your visit to answer some questions about your experiences? You'll receive this prize for sharing your time and thoughts with us.*

If the visitors agreed to participate, data collectors then asked:

Is this your first visit to the new museum?

How about for the rest of your group?

How many are with you today?

These screening questions assured the following features of our sample:

- Repeat visitors were defined as any group in which any one member had been to the new museum, even if it wasn't the individual being actively recruited. This was consistent with the definition used in the previous studies.
- The sample included only those visiting in casual groups. Visitors arriving with a tour or school group or to attend a lecture or museum tour were excluded.³

² This procedure differed slightly from that used in the previous studies, in which visitors were recruited at the first floor entrance and interviewed in the Canyon; the latter served our needs for collecting quantitative data on stay-time and tracking and timing.

³ Unlike in the previous studies, the EIS sample did include University of Utah students or staff, so long as they were not there with a class or on a special assignment. Many such groups arrived on Saturday and Sunday during this study, with motivations similar to those of other visitors: simply looking for something to do with their families on a cold and cloudy day. In previous studies of stay-time and behavior in the galleries, researchers felt that these groups would NOT be representative, since they don't pay an entrance fee and often arrive to do a school assignment.

Once a group was successfully recruited, data collectors gave them a pre-numbered wristband and pointed to the tables, asking them to stop there to talk with us when they finished their visit that day. Once the group went into the exhibits, the data collector recorded that group's wristband number, time entered, visit status (first-time or repeat), and gender. This form was used later when the group returned (or was marked "no show" for escapees).

Quotas for this study were determined based on previous experiences using similar methods, in which 50 Cued Questionnaires were found to provide a comprehensive view without too much repetition, and 25 exit interviews provided a good variety of responses without generating so much data that analysis became a challenge. We exceeded these quotas slightly and our final sample was 60 CQs and 30 EIs.

A continuous random sampling method was used for recruiting subjects. In this method, an eligible visitor was approached at the ticket-takers' gate. If that visitor (or his/her group) declined to participate or was found to be ineligible, the next visitor in the same location was approached.

We collected data on five full days, from Friday, December 13 through Tuesday, December 17. In order to distribute our sample over several different days of the week, we aimed for 17 recruits on each day (12 CQs and 5 EIs), with entry times spread throughout each day. This also left us with a few extra to replace any who "escaped," or left the building without talking with us. In actual practice, some days were extremely slow while others were busier, so we sometimes recruited continuously as available.

Overall, we approached 140 people to participate in the study, successfully recruited 121 of them, and completed 93 surveys. Twenty-eight (23%) escaped, either letting us know they were out of time for the day, or just not returning. Only six refusals were recorded, although there might have been more that were not marked on the log sheets. This is a very low refusal rate.

This table shows the numbers that were recruited and the number of samples that were completed on each day of data collection.

Date	Total # approached	CQs completed	EIs completed	Total day's sample
Friday Dec 13	28	9	6	15
Saturday Dec 14	51	21	11	32
Sunday Dec 15	29	19	5	24
Monday Dec 16	19	9	4	13
Tuesday Dec 17	13	5	4	9
Totals	140	63	30	93

Table 1. Numbers of visitors recruited and the number of samples completed on each day of data collection.

In order to ensure a random administration of Cued Questionnaires and Exit Interviews, we identified visitor groups for each procedure at the time they were recruited. Upon being recruited, each group was given one of two different colored wristbands—blue for CQs and yellow for EIs—to identify them later. We alternated giving out two blue (CQ) wristbands with giving out one yellow (EI) wristband throughout each day, until our quota was reached. When visitors returned from their visit and indicated they were willing to complete the study, their wristband color and number were matched with the proper form to be administered.

Data collection

Researchers trained three data collectors to help administer the CQs and EIs, and one of the researchers was present on the floor at all times. Two of the data collectors were focused on organizing and administering the CQs, while one assisted researcher Barbara Becker in administering the EIs.

The data collector who met a returning visitor requested and recorded some additional demographic data on each pre-numbered form. Identical data were recorded for the EIs and CQs, yielding a total sample of 93. Altogether, the following data were recorded for each subject:

- Time recruited
- Time returning to the station
- Visit status—Repeat (R) or First-time (F)
- Gender
- Age (decade)
- Number in group
- Adults with kids in group (AK) or adult-only group (AO)
- Museum membership
- Zip code

In addition, each respondent (CQs and EIs) was asked: *Do you have any special interest, knowledge or training in Natural History?* EIs only were also asked: *What inspired you to come/come back to the museum today?* The demographics and characteristics of the sample are summarized starting on page 19 of this report.

Otherwise, procedures for the two forms differed slightly. Visitors were asked either to fill out the CQ in their own writing alone at a table, or they were invited to sit down with one of the data collectors to carry out the EI conversation. Most of the EI conversations were recorded for later reference. (See Appendix 3 for Detailed Protocols.) Because of the way the administrative area and logistics were organized, up to two CQs and two EIs could take place at once (although this rarely happened). In all cases, crayons and paper were available for restless children.

The CQ form consisted of four questions that have been administered by Serrell & Associates for over 20 years in a variety of museums, zoos, aquariums, gardens, and other venues, and have been shown to successfully motivate visitors to think and record their thoughts and feelings about their visit. The CQ has been used primarily for individual exhibits, including *Weaving a Revolution* at NHMU. See the CQ form in Appendix 4.

The EI form contained two questions in a semi-open-ended conversational format and was created for this study. As described above, the data collectors on the EI invited visitors to connect their experiences in the exhibitions with themes considered important by the museum. See the EI form in Appendix 5. The themes that were tested in this procedure were prepared by the researchers along with museum staff. Before formal interviews began, the themes were piloted with three NHMU visitor groups and then finalized. (A full description of the themes and this process may be found in Section 1.4 The Museum’s Intentions: Content and Impact, beginning on page 17.)

On both forms, a final question about NHMU’s mission was also asked. Visitors were shown the Mission statement and asked: *Was there a place in the museum that made you think of your place in the natural world?*

When a respondent was finished writing or the conversation was over, data collectors thanked the respondent, answered any further questions, and gave a choice of NHMU magnets as a gift.



Children could draw while adults filled out the questionnaire.

Data analysis

CQ data consisted of responses written by the subjects on each individually numbered form. Data collectors daily transcribed the demographic and visitation information along with the visitors’ responses into an Excel spreadsheet for CQ data. Data collectors also typed into the spreadsheet any other observations made for the group, such as “father and son discussed each answer.” Transcribing on location allowed data collectors to work with each other to decipher difficult handwriting, abbreviations, or references.

EI data consisted of the recordings, written notes, and subject information on the forms. As soon as possible after each interview, the data collector reviewed and entered pertinent data into an Excel spreadsheet for EI data. While the spreadsheet was imperative, the recordings remained vital during review and analysis, as researchers needed to recall accurately what a visitor said or which words they used to describe certain exhibits.

Statistical analysis of quantitative data was carried out by Ellen Bechtol, who also assisted with the analysis of the WMTS demographics and subject traits. Analysis of the qualitative results was carried out by researchers Barbara Becker, Beverly Serrell, and Ellen Bechtol.

Results were analyzed qualitatively by looking for trends and frequency of references to subjects, places, activities, and concepts. In some sections, results were also examined for AO versus AK and for R versus F groups.

In overall qualitative analysis, researchers employed two different approaches, the “bottom-up” and “top-down” approaches.

In the “bottom up” approach, visitor responses were examined directly for words, descriptions, locations, activities, or trends revealed by grouping, comparing, and reanalyzing all the responses together and one at a time. This is the “visitor perspective” approach, in which visitors’ words are seen as likely to directly reveal patterns in thinking, feeling, or comprehension by the sample of general visitors.

In the “top-down” approach, visitor responses were compared with the museum’s intentions (educational themes and goals) and checked against the “evidence” exhibit developers embedded in the galleries for each theme. This is the “thematic approach.”

One type of analysis or sometimes both are used in the different sections of the report; the approach used is identified for each discussion. In Section 1.4 The Museum’s Intentions: Content and Impact (page 17), we describe and explain the fundamental concepts employed in the top-down approach.

Challenges and limitations to the study

During the week of the Exit Interview Study, the air quality in Salt Lake City was particularly bad due to a temperature inversion, and this showed up regularly in the results. Several respondents said they visited the museum for something to do when they couldn’t be outside. A few referred to the inversion in responses about humans’ place in nature.

Since data collection for the EIS took place in December 2013, it was fairly close to the Christmas holiday. Average attendance was lower during this time period than in our previous two studies⁴, but we were easily able to recruit and exceed our quota goals for the study. Less crowding during the December time period might even have improved visitors’ overall experience and comprehension, because respondents could more easily get to all the activities and texts they were interested in.

The locations for recruiting and interviewing subjects changed from those used for the previous two whole-museum studies. (See Footnote 2 on page 11.) This switch meant that the average times spent in the museum by EIS subjects were not comparable to average times spent by subjects in the previous studies, since the visits started and ended in entirely different places. (In fact, some EIS subjects were observed going back into the exhibits once the interview was

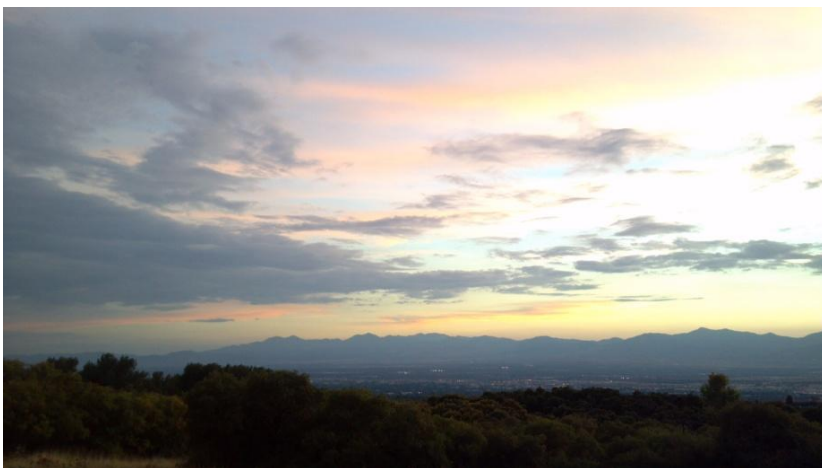
⁴ Average daily attendance for EIS data collection (Friday through Tuesday) was 284. For the STS (April 2012), average daily attendance for the 10-day study period was 982. For the WMTS (September 28 through November 8, 2012), average daily attendance for the 49-day study period was 540.

over.) However, researchers felt that directly comparable stay-time data was less important for the EIS, since it was not the main purpose of the study.

Researchers selected the *Canyon* location for the face-to-face interviews both to make recording possible and to put no undue burden on subjects (for example, by asking them to retreat to a quieter location). The recording technology chosen (see Appendix 3) served our needs extremely well, although recordings were occasionally compromised by sudden noises (e.g., moving furniture) or the arrival of loud groups. These factors should be kept in mind for future studies in which recording is desired, particularly if they take place during more crowded times of the year.

The techniques of data collection used in the EIS are aimed at adults or others with an ability to verbalize or write down their thoughts on fairly abstract subjects (although a few respondents did consult with their kids in answering the questions). But the large and important family audience at NHMU (60% in this sample) did shape the results in a few ways: In some cases kids may have shortened or disrupted the times adults were able to spend in writing or talking with the data collectors. Some families with kids seemed to put more attention on their favorite interactives than on the content they were being asked to think about. The kid factor doesn't weaken the results but rather provides a realistic snapshot of how the museum's broad range of visitors are likely to interact with the ideas and content presented at the museum.

The data collected for this study consisted of responses in visitors' own words to open-ended questions posed. In addition, the responses by definition were broad, probing subjects' overall experiences during their one- to more than four-hour visits. Whether written or verbal, these kinds of responses pose challenges to researchers for analysis, as opposed to a check-list type of exit study. The data—visitors' words— can be interpreted in different ways. Researchers have reported their interpretation in this report, and museum staff are urged to look at the original data themselves or use it as a foundation for future analyses.



Winter air quality reminded some visitors of humans' place in nature.

1.4 THE MUSEUM'S INTENTIONS: CONTENT AND IMPACT

In order to assess the responses provided by our sample in a top-down way, we compared them with the intentions and goals set out by the museum.

Developers and designers planned the new building around several core subjects: evolution, ecology, biodiversity, and sustainability. The content is rooted in the story of Utah's geology, native peoples, and biodiversity, but applicable to the broader natural world. In addition, the experience was augmented through stories of ongoing research being carried out by scientists at the museum and the University of Utah.

The mission of the Natural History Museum of Utah is:

To illuminate the natural world and the place of humans within it.

As a statement of a museum's purpose, a mission statement encompasses the impact the museum wants to have on its audiences. NHMU's mission statement is visible on their website but is not presented to visitors anywhere in the building.

The museum was very interested in finding out whether visitors were grasping their core messages. Accordingly, our first step was to ask museum staff to rewrite the four core subjects into "themes," using the kinds of words visitors might use.⁵ In the following weeks, we worked closely with staff to modify, merge, and edit the themes.

We arrived at the museum on December 12 with five draft theme statements for pilot-testing. We talked with several visitor groups seated in the *Canyon*, asking them to read and discuss the themes with us. Following these conversations, we proposed four main themes to be used for this study, which were subsequently approved by museum staff. (This exercise also produced a Big Idea that encompassed the primary content of the museum. See discussion of Big Idea below.)

The four themes used in the study were:

- All living things change over time through a process called evolution.
- An ecological web of connections among living organisms and the environment sustains life on our planet.
- Utah's geology, landscape, and climate have changed dramatically over 150 million years.
- Ongoing research at the Museum and the University of Utah helps us learn about our place in the natural world.

⁵ In researchers' experience, people are more likely to connect with or articulate a short sentence about a "theme" rather than a single word. Webster's New World College Dictionary (Fourth Edition) defines theme as: "A recurring, unifying subject or idea....A musical phrase upon which variations are developed." Both definitions seem relevant to museum storytelling!

In addition to developing the theme statements, we asked museum staff to provide a short list of “evidence” for each theme—exhibits or areas in the museum where they felt each theme was strongly expressed. The Exit Interviews focused on the themes respondents chose to talk about and the evidence they identified for the themes. The evidence lists given to us by the museum provided guidelines for the interviewers to probe the respondents, as well as an account to compare participant responses with. (See the staff’s list of evidence in Appendix 6.)

Staff intentions were also chronicled by having some staff members fill out the Cued Questionnaire themselves. Director Sarah George, marketing manager Jim Breitingner, exhibit developer Lisa Thompson, and chief scientist Duncan Metcalf agreed to fill out the CQ in a way that reflected each person’s view of the museum’s purpose and impact. Their responses provided valuable evidence about the museum’s intentions. (Appendix 7 contains a summary of all the staff member responses.)

Proposed: a Big Idea

In reviewing and revising the theme statements, researchers worked with the museum’s stated intentions as described above, as well as various other museum documents, including materials provided for the (successful) application to the 2013 AAM Excellence in Exhibitions award, and recent promotional and membership brochures (“Spend the day—you have 150 million years to cover” and “You’ll want more than a day to cover 150 million years”). We also made use of visitors’ own language from previous research and during conversations on the floor.

The process helped us generate the four themes as described above. But in an even broader view of the museum’s goals, the process also generated a Big Idea. Serrell (1996) defines a Big Idea as “a statement of what the [museum] is about...a statement in one sentence with a subject, an action, and a consequence.... a single focus that unifies all its parts...”

As one outcome of the process of refining the theme statements, Serrell proposed the following Big Idea to incorporate the unifying story of the museum:

*Utah’s geological record and evolving biodiversity reveal
millions of years of changing natural history.*

This statement was informally approved by Becky Menlove during our site visit. We used the Big Idea to analyze some results in terms of the museum’s content, in a broader way than was possible with the separate themes.

1.5 CHARACTERISTICS OF THE SAMPLE

Demographics

The EIS consisted of 93 subjects who either participated in an Exit Interview (n=30) or completed a Cued Questionnaire (n=63) at the end of their visit. Data were collected between Friday, December 13 and Tuesday, December 17, 2013 during the museum's regular hours of operation. See pages 11-16 for details on the study methods. Since subjects were recruited using one method regardless of whether they were completing a questionnaire (CQ) or an interview (EI), we have examined their demographic and visitation characteristics as an entire sample. The characteristics of the two populations were very similar with the EI group containing a few more repeat visitors but also having a smaller sample size compared with the CQ group.

Two recent studies, the Stay-Time Study (STS) and the Whole Museum Tracking Study (WMTS), also collected demographic information on study participants. The table below compares the characteristics of the study populations for these studies and the EIS. Of note is that in the EIS population, there was a higher percentage of repeat visitors but not a higher percentage of members. We would hope to see the inverse of this—that as visitors come back to the museum again and again, they purchase a membership. This trend, along with a closer look at group make-up is discussed below.

Visitor Demographic	EIS (n=93) (Dec 2013)	WMTS (n=100) (October 2012)	STS (n=418) (April 2012)
First-time visitors	34%	52%	63%
Repeat visitors	66%	48%	37%
Adult-only group	40%	37%	43%
Group with adults and kids	60%	63%	57%
Non-member	71%	70%	80%
Member	29%	30%	20%
Residents	67%	58%	74%
Utah tourists	3%	2%	2%
Other U.S. states	23%	37%	18%
International	3%	2%	2%
Special interest	37%	23%	NA
No special interest	74%	77%	NA

Table 2. Characteristics of the study populations for this Exit Interview Study (EIS) compared with the Whole Museum Tracking Study (WMTS) completed October 2012 and the Stay-Time Study (STS) completed April 2012.

Repeat visits, Group makeup, and Membership

Sixty-six percent of the EIS sample was comprised of repeat visitors (R). This proportion is significantly higher than that of the WMTS (48%) and STS (37%) samples. The museum had previously expressed a desire to grow the proportion of repeat visitors, and the EIS data suggests that this might have happened. Another factor that could contribute is time of year; perhaps more local families visit during December holidays. A year-around assessment of audiences is recommended to provide insights to this issue.

Groups with kids (AK) were the majority in the EIS sample, making up 60% of the population, while adult-only groups (AO) made up 40%. This split is not far from the WMTS and STS samples. In the WMTS, 63% of the sample was AKs and 37% AO groups. The STS sample saw 57% of subjects in groups with kids while 43% were in adult-only groups. Although the proportions were similar, there was a slight statistical significance to the differences between the three studies.

In the WMTS and STS, repeat visitors were more often part of groups with kids. Because of this, we did a cross-analysis for the EIS sample and found a similar result: For the EIS sample, 70% of repeat visitors were in groups with kids, and 30% of repeat visitors were in adult-only groups.

In this study, 29% of the sample were members and 71% were not. This very closely mirrors the visitor characteristics from the WMTS. Both the WMTS and EIS samples had more members than the STS. This is perhaps an expected result as the museum has been open for a longer period of time, thus allowing greater opportunity for visitors to become members. Of the 29% of the EIS sample who were members, 81% of these individuals were in groups with kids. Reaching out and marketing membership towards adult-only visitors was identified as an opportunity for growth in the WMTS, and this is still true today.

Special interest and Reason for visiting

Special interest

Just over one-third (37%) of EIS participants expressed having some type of special interest, knowledge, or training in natural history. Analysis of these responses yielded two main groupings—one related to jobs, the other related to a general interest in or awareness of something related to natural history. During the exit interviews, five respondents said they had no special interest when asked directly. However, after saying "no" they went on to elaborate ("but") that they did have a special interest.

Responses related to jobs were most often about the work of the respondent but sometimes about the work of a spouse or relative:

"Work at a science center in Charlotte, NC (aq., rain forest, live animals, physics)."
[CQ8]

"But I'm a physician so interested in the life sciences [physiology]" [EI19]

"Husband studied geology." [CQ26]

Responses that reflected a general interest in or awareness of natural history mentioned courses taken in college, specific topics covered by the museum, or a hobby:

Subject likes rock formations, geology, hikes & climbs. [DC comment about CQ14]

"I'm a big fan of the west." [EI5]

"Spent time on an Indian reservation." [CQ1]

Reason for visiting

As part of the exit interviews, the researchers asked subjects their reason for visiting the museum. Subjects came for a variety of reasons including getting out of the house, showing guests around, and doing something that kids enjoyed:

"Children's repeated requests. It's pleasant to come on Sunday morning. Open, repeated visits are crucial here. One time is not enough." [EI22]

"Parents visiting from out of town." [EI15]

"To get out of the pollution, to get outside." [EI1]

The most-often cited reason for visiting was kids, followed by showing visitors around, and wanting to get out of the house. A couple visitors mentioned the Connect Pass, having free tickets, or wanting to escape from the inversion:

"Bought a Connect Pass and this is one of the options." [EI12]

"Have been wanting to come for a while. Had free tickets from Zion's Bank, thought it would be a good way to get out of the bad air." [EI29]

And for a few subjects, the visit seemed to be on their bucket list:

"We live nearby and watched the construction. I've always wanted to see inside." [EI30]

They grew up going to the museum at its old location and are in town for a family funeral. They went to the old location yesterday and were "shocked to find it gone!" They found the new location on internet. [DC comment about EI23]

"My son loves dinosaurs. And an architect friend had been to a reception here and told us about it." [EI18]

Time

Time is an indicator of engagement. Knowing how long visitors spent in the museum, in an exhibit area, or at an exhibit element is information the museum can use for the purposes of marketing, programming, visitor services, and renovating existing exhibits or developing new ones.

For each subject, DCs recorded the time the subject was recruited and then the time the subject returned to participate in the study. Entry and exit times were collected in the *Canyon* area inside the ticket-takers' gate. Of the 93 subjects in the EIS sample, we had stay-time data for 84 subjects. (For the remaining subjects, the DC forgot to mark one of the time boxes.)

The average (mean) time spent in the museum for the EIS sample was 99 minutes (1 hour, 39 minutes) and the median stay-time was 91 minutes (1 hour, 31 minutes). The shortest visit was 12 minutes and the longest visit was 275 minutes (4 hours, 35 minutes). The distribution of time spent in the museum by EIS subjects was normal (see Figure 2) with the mean and median stay-times well-represented.

Distribution of Time Spent in the Museum

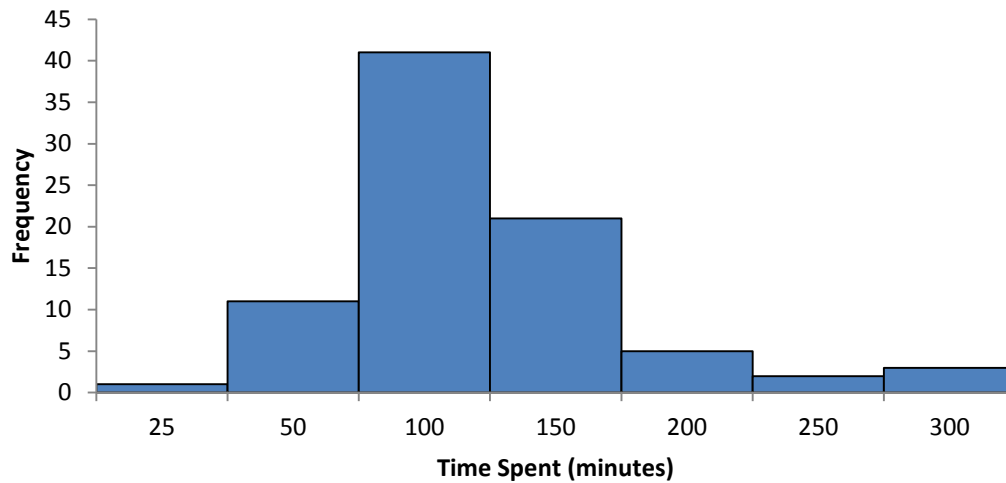


Figure 2. Distribution of time spent in the museum for the EIS population. This is a normal distribution with the mean (99 minutes) and median (91 minutes) well represented.

In comparison to the STS and WMTS, the EIS sample spent less time in the museum (see Table X, below), but this is most likely due to differences in data collection methods. Entry and exit times for the EIS sample were collected inside the ticket-takers' gate in the *Canyon* area (see Section 1.3 Methods, page 11). The time that subjects spent after purchasing their tickets and before tickets were scanned was not recorded. Also, the time subjects spent after the interview was not recorded. Some subjects were seen going back into the galleries after their interview, and one subject was thought to have spent 40 more minutes visiting galleries. In the STS and WMTS studies, subjects were recruited at the first floor entrance (entry time) and interviewed in the *Canyon* as close as possible to the time they left the building (exit time).

Visitor Study →	EIS (n=84) (Dec 2013)	WMTS (n=100) (October 2012)	STS (n=418) (April 2012)
Average time spent (minutes)	99	116	111

Table 3. Average time spent in the museum by the study populations for this Exit Interview Study (EIS) compared with the Whole Museum Tracking Study (WMTS) and the Stay-Time Study (STS). Recruiting methods were different for these three studies, and the stay-times are not directly comparable.

Conclusions and recommendations for EIS visitor characteristics

- Market memberships towards adult-only visitors. This was identified as an opportunity for growth in the WMTS, and this is still true today.
- Conduct visitor entry surveys throughout the year to get a better sense of your audience.

PART 2. FINDINGS

This part of the report describes the Findings of the study in three sections:

- Section 2.1 discusses responses to questions asked only on the Cued Questionnaires (CQs).
- Section 2.2 discusses responses to questions asked only on the Exit Interviews (EIs).
- Section 2.3 discusses responses to questions asked on both the CQs and the EIs.

2.1 FINDINGS: CUED QUESTIONNAIRES (CQs)

As described in the Methods section (pages 11-16), the Cued Questionnaire (or CQ) was a one-page open-ended questionnaire that visitors responded to in writing using their own words.

This part of the report will describe results from two questions asked exclusively on the CQs:

- *Overall, what would you say is the main purpose of the displays in the museum?*
- *What is one new idea you are taking away with you?*

CQs: Main purpose of the displays

The first question in the CQ was:

Overall, what would you say is the main purpose of the displays in this museum?

This was followed by two prompts:

To show...

To make people...

We know from past studies that visitors tend to respond to the prompt “To show...” by describing the content of an exhibition (what the museum presented), and that they tend to respond to the prompt “To make people...” by describing the museums’ intended impact with that content. These visitors followed that trend.

The answers visitors gave to these questions were analyzed both from “bottom-up”—by comparing and sorting the responses by words and content—and from the “top-down”—comparing them with purposes identified by museum staff. In their written responses to the CQ (see Appendix 7), museum staff defined the purpose of the museum in the following ways:

To show people...

1. The incredible diversity and complexity of the natural world...To also demonstrate that simple conceptual tools can transform this complexity into patterned simplicity.
2. To show people objects from Utah that tell the story of the state’s natural history.
3. The many connections between all living organisms and non-living systems that sustain life.
4. To illuminate the natural world and the place of humans within it, with a particular focus on the natural history of Utah and the region.

To make people...

1. To make people appreciate the world around them, and instill or reinforce the fact that humans [people] are part of the natural world.
2. To make people better understand the state, including the science that make it what it is, the cultures that have lived here before Anglo-Americans, and biological sciences.

3. To make people consider their own place in this web and nurture their connection to the natural world.
4. To make people appreciate this extraordinary place, appreciate how amazing nature truly is, and think carefully about choices they make about the future as well as how they live their daily lives.

From both top-down and bottom-up, results for these questions show that the majority of respondents were able to express an understanding of the main purpose of the Natural History Museum of Utah. These respondents were on the whole excited by the content and many were inspired to think about their place in the natural world. A number of others also commented on the unique ways of learning at and experiencing the museum.

For this section, we review the responses about the purpose of the museum’s displays, both overall (individual subjects’ responses to both prompts) and specifically (by considering responses of the whole group to each individual prompt, *To show... To make people...*).

		Specific responses ↓	Specific responses ↓
Overall response ⇒	Respondent	To show...	To make people...
	CQ100	How the world works	Understand their place in nature
Overall response ⇒	CQ101	The past and future of the earth	Think about where we came from

Table 4. This diagram uses fictional respondents and responses to illustrate the distinction between the overall responses and the specific responses presented in this section of the report.

We review the overall responses first, and then the responses to each prompt.

Overall combined responses—To show... To make people...

To analyze the overall responses, we reviewed all the questionnaires together and ranked each visitor’s responses according to the following categories⁶:

- Category 1—aligned with staff purposes, mentioning several appropriate facets
- Category 2—aligned with staff purposes, with fewer appropriate facets
- Category 3—aligned only very generally with staff purposes
- Category 4—response limited

Researchers placed nearly half (30) of the 63 responses in categories 1 or 2; that is, we felt they were closely aligned with staff purposes completely or almost so. These respondents saw the museum as showing many facets of natural history, particularly in Utah. At least 17 respondents also specifically considered the place of people in the natural world, and/or contemplated the past and future of the Earth.

⁶ Visitor responses don’t fall neatly into exclusive categories, and this is just one possible interpretation. Readers should feel free to review the original data for themselves. See Appendix 1.

Examples of category 1 responses included:

"To show the interconnectedness/dependence throughout time of plant, animal, and inanimate elements, creating sustainability, via evolution/adaptation necessitated by changes in climate, terrain, etc. To make people more aware of the above and more careful/respectful of helping to maintain healthy ecological environments." [CQ2]

"To show the elements that make up the natural world (now and through time)—geological, biological, climatic, anthropologic, etc. and how they interact. To make people interested and excited about the above, and even inspire action to improve human's role in the natural world." [CQ35]

"To show the wide and varied range of subjects that comprises natural history within Utah from prehistoric to modern times. To make people aware of their relationship with the natural world in the past, presently, and hopefully guide their understanding of actions (own and government) on the future." [CQ40]

Examples of category 2 responses included:

"The main purpose is to tell people about our natural surroundings and the history involved in our back yards. To make people understand where they came from and to gain knowledge about the world around us." [CQ14]

"To show how and why things have occurred in our history. To make people understand how our ecosystem works and its natural wonders." [CQ26]

"To show the natural history of Utah and cultural history of Utah. To make people explore and understand their surroundings better, including the plants, animals, rocks around them & their own bodies." [CQ58]

About one-third of the total responses fell into category 3 ("general"). These responses may have captured some aspects of the museum's story but were vague or touched on just one facet:

"To show the history of the earth and its inhabitants. To make people understand the natural history better." [CQ61]

"To educate and engage the public in natural history and conservation. To make them care." [CQ9]

Only nine responses were placed in category 4 ("limited"), failing to address any specific aspect of the museum's program:

"To show about history. To make people interested in learning." [CQ5]

In reviewing the responses placed in each category, researchers noticed that they gave a greater number of category 4 rankings ("limited") to groups of adults with kids (AK) than to adult-only groups (AO), and that more AO groups than AK groups were given category 1 rankings. In other words, AK groups were more likely to give general responses with less specific content. This suggests that AK motivations to visit may be focused a bit more on having fun with their kids than on other things.

However, researchers also noticed that quite a few respondents in both prompts (*To show... To make people...*) drew attention in their answers to the unique powers of a museum to educate and engage, sometimes in ways that appeal particularly to children. In the following quotes, the relevant clauses are highlighted with italics:

"Show and teach *in a 'hands-on' way* the geological, ancient animal history of Utah and its environment." [CQ4]

"To show actual examples of *things typically seen only in books or on T.V.* To make people have a better perspective of the things on display (sizes, shapes)." [CQ23]

"To show the Utah environment, history, *awareness to the children.*" [CQ51]

"To show Utah nature. To heighten awareness, *education in a way not just out of books.*" [CQ56]

Some said the museum could educate, engage, and even make people think in new ways:

"To educate and entertain. To make people *think outside of their normal thought process* and appreciate the natural world." [CQ59]

"To make curious, informed, *critical thinkers.*" [CQ60]

At least four also referred to a foundation of research and discovery they saw in the stories being told. Again, relevant clauses are highlighted in italics:

"To make them appreciate evolutionary concepts and appreciate *the work involved in gathering fossils.*" [CQ 52]

"Education and *preservation of the past.*" [CQ55]

"Utah through past, present, and future and *how we learn about it.*" [CQ13]

This tendency for subjects to focus on museum "affordances" (what the museum provides to enable learning) was apparent throughout the study and will be discussed in Part 3 of the report.

In the next segments, we will look at all the responses for each prompt separately.

Specific responses—To show...

To show... is the first prompt accompanying the question, *What would you say is the main purpose of the displays in this museum?* As described above, this phrase usually prompts visitors to talk about the content they remember. For this project, researchers analyzed the responses from the bottom-up by searching for trends in words and phrases; and top-down, by checking against the Big Idea suggested on page 18 by the researchers:

*Utah's geological record and evolving biodiversity reveal
millions of years of changing natural history.*

For the 63 NHMU visitors in this sample, while some referred to geology and biodiversity (dinosaurs, animals/plants, and people), the topics most often mentioned were Utah, history, and change through time.⁷

Words used in 63 responses to the prompt <i>To show...</i>	Times mentioned	<i>Specific items named (listed most to least often)</i>
History/past/change through time	43	- Used the word "history" - The past, how life was, what went before - Progression, development, changes, from...to, through time, time periods, evolution
Utah or "the state"	24	
Natural world, non-Utah	15	- People/native civilizations - Geology - Plants and animals - Dinosaurs
Natural history	14	
The future	5	

Table 5. Number of times a word or phrase was mentioned among all the interviews in response to the *To show...* prompt. Since some visitors mentioned more than one word or phrase, the totals add up to more than the number of subjects.

History/past/change through time

Cross-cutting all the answers, whether about Utah or the natural world in general, were words and phrases referring to history, the past, or change through time. Forty-three of the 63 respondents included such a reference in their responses. Quite a few (up to 14) implied that the museum's story was strictly about the past (whether they intended to say that or not).

The word "history" (not including the phrase "natural history") was mentioned 20 times. Six used the word in reference to Utah, while others used it more generally:

"To show what Utah has to teach us about itself and its history." [CQ7]

"To show the history of the area, increase knowledge and interest in discovering and preserving the history of the area." [CQ28]

"To show Utah history—geological, paleontological, and Native American." [CQ49]

Twelve mentioned subjects related to the past, how life was or what went before:

"Just to give people a little taste of how life existed in the past." [CQ12]

"Utah, the way it began." [CQ18]

"To show the history, to present people how the world once was" [CQ36]

⁷ In a new trend for this museum compared to previous reports, "dinosaurs" was NOT the most mentioned subject!

Eleven others used words specifically indicating change through time, including progression, development, geological time periods, and evolution:

"To show the geologic and anthropological development of Utah." [CQ27]

"To show the different time periods and evolution of the earth, with a special focus on Utah." [CQ32]

"To show development and change of life/climate in Utah..." [CQ44]

Utah or "the state"

Of the 63 responses to the prompt *To show...* 24 included Utah in their answers, feeling that the museum's purpose was focused either primarily or partially on Utah natural history, whether it was dinosaurs, geology, cultures, or Utah's past and future:

"To show Utah's natural history and science of life" [CQ3]

"To show Utah history—geological, paleontological, and Native American." [CQ48]

Natural world, non-Utah

Of the 15 responses in this category, some mention the natural world in a general way:

"Educate us about earth science and native civilization." [CQ34]

"To show the history of our natural environment in the west." [CQ53]

Others listed specific subjects:

"To show visually different facets of the world, from cells to dinosaurs to geologic features." [CQ25]

"To show several branches of sciences including zoology, anthropology, genetics and biology." [CQ52]

Natural history

Fourteen respondents used the words "natural history" in their answers, and a few even capitalized the words. This certainly reflects an awareness of the museum's name, although it's impossible to know exactly how these respondents defined "natural history"; some may have used it as a general term to cover a range of subjects. Four used the term by itself, and 10 used it in connection to Utah:

"Educate and engage the public in natural history and conservation." [CQ9]

"To show natural history's importance. To educate and empower people to make more responsible decisions re: environment, culture, etc." [CQ20]

"To generally educate and highlight Utah's natural history." [CQ63]

The future

At least 5 responses included references to the future:

"To acquaint us with the past and prepare us for the future." [CQ1]

"To show what has gone on in our past and how it might affect our future" [CQ24]

Specific responses—To make people...

To make people... is the second prompt following the question *What would you say is the main purpose of the displays in this museum?* Subjects generally began their responses to this prompt by using a verb, and their remarks may be seen as describing the “impact” they felt the museum could make. Researchers analyzed the results by keeping in mind NHMU’s mission statement:

To illuminate the natural world and the place of humans within it.

A bottom-up analysis showed that the 63 respondents provided answers in three overlapping (but fairly evenly distributed) categories:

22 said the purpose was: To make people...

Learn something (know, learn, understand, realize, become knowledgeable)

20 said the purpose was: To make people...

Do something (think about, appreciate, care, prepare)

21 said the purpose was: To make people...

Become something (curious, excited, aware, interested)

Following are examples of each category.

To learn something

“Understand how our ecosystem works and its natural wonders” [CQ26]

“More knowledgeable about how the world became what it is today” [CQ38]

“Educated and more knowledgeable of our past, present, and future.” [CQ43]

To do something

“Appreciate the true history of this remarkable place and those who inhabited it, both animal and man. [CQ42]

“Think on the past and reflect on the future, encourage critical thinking.” [CQ45]

“Explore and understand their surroundings better, including the plants, animals, rocks around them and their own bodies.” [CQ58]

To become something

“Aware, excited, curious, anxious to learn and see themselves as part of this world.” [CQ4]

“More aware of the diversity of our environment and history of our planet.” [CQ54]

“Inspired to learn and understand more about where they live.” [CQ57]

In most of the responses, subjects went on to suggest what people should learn or become more aware of, that is, the content:

The natural world

"To make people appreciate our earth and be awed by it" [CQ16]

"Think and learn in interactive ways about the impact of our landscape, ecosystems, the history of cultures, etc." [CQ20]

"Think about the world around them and gain a better understanding of the facets that shape their lives." [CQ25]

Earth's past and change through time

"To make people know earth's past" [CQ6]

"Interested in the world around us and how it has evolved" [CQ34]

"Aware of how things (environment, culture) change over time" [CQ51]

Utah

"To make people aware of how cool our state is." [CQ13]

"Understand the historic and current ecology, geology, history of Utah and region." [CQ15]

"To think about our area in a geo-historical context—fun to think about everything else that's been here for 100s of millions of years." [CQ19]

Human's place in nature and our responsibility to it

"Realize current lifestyles are not sustainable." [CQ10]

"Think about the earth and our origin in a more holistic way and hopefully impact their way of thinking and how they affect the world." [CQ32]

"Inspire action to improve humans' role in the natural world." [CQ35]

Some respondents were concerned that people understand where they came from:

"To make people realize that our way of life is a fairly new manner of living." [CQ12]

"To understand where they came from and to gain knowledge about the world around us." [CQ14]

"Have a greater understanding of where we came from and the value of the natural world as well as our responsibility to it." [CQ27]

Conclusions and recommendations for Main Purpose of the Displays

Over half of the visitors in this study expressed an understanding of the NHMU's purpose aligned with that of NHMU staff. In line with staff responses, subjects also felt that the museum should be in the business of teaching, sparking interest, and inspiring excitement.

Most of these subjects saw the museum to be about Utah. This focus seemed to give them an accessible story in which to root their experiences at the museum, whether they were local residents or tourists. But whether they mentioned Utah or not, quite a few also seemed to make an easy transition from the stories of Utah told in the exhibits to the natural world in general.

A number of respondents expressed awareness and sensitivity to environmental issues, especially in the *To make people...* answers. This suggests that the impact intended in the museum's mission statement and referred to in many of the staff's *To make...* statements (e.g., *To make people... "consider their place and nurture their connection, think carefully about choices for today and the future"*) is taking place to some extent.

Quite a few subjects used the phrase "natural history" in their responses, although it's unclear how they defined or thought about it. The subject and meaning of natural history has been a "hot topic" recently in professional circles (<http://naturalhistorynetwork.org/>). Learning more about how visitors understand the phrase (as well as related terms such as "natural world") could have far-reaching implications for marketing and branding of the museum.

Most notably, however, a majority of these subjects expressed the sense that the museum's purpose was about history, the past, or change through time. A number of respondents specifically felt the museum should help people learn about "where they came from," many going on to say that it would help us understand our future. This focus on history and change was not represented strongly in staff responses to these questions. The museum could perhaps capitalize on their understanding that visitors are leaving (and perhaps entering?) the museum with this framework.

Recommendations

- Use the "change" storyline to bring out more specific aspects of the message, such as evolution or humans' adaptations through time.
- Use the "past and future" storyline to beef up the presentation of humans' place in nature and our responsibility to it.
- Use concept mapping to investigate how visitors think about natural history and the natural world.



“I never realized how many different minerals were in Utah,
and how big the dynogators were.”

CQs: One New Idea

The next open-ended question for visitors to respond to on the Cued Questionnaires was:
What is one new idea you are taking away with you?

This question was followed by two prompts:
I didn't know, or I never realized...
It reminded me...

The first prompt, *I didn't know, or I never realized...*, reveals what details of the exhibitions particularly stood out for the visitors in this sample; the more specific the answers, the more evidence we saw that people could recall what they read and engaged with. The *It reminded me...* prompt opens the door for more affective responses, as visitors connect with prior knowledge or related experiences they might have had.

I didn't know, or I never realized...

Of the 63 subjects who answered the CQ, 58 responded to this question. Of those responses, more than 36 (60%) could be traced back to a specific display or activity, and 13 (23%) were traceable to an area of the museum. So a strong majority of all the respondents said they had learned something new from specific experiences at the museum, including two who remarked on the building itself. All areas of the museum were represented. (See Table 6.)

Exhibit Area	Total	"One new idea" and number of times mentioned
<i>Sky</i>	1	1 snowflake
<i>Life</i>	9	4 animal fun facts 3 human lineage stories 1 cells 1 keratin
<i>Land (including Gems)</i>	10	5 diversity of rocks/minerals 1 earthquake interactive 3 erosion interactives 1 how diamonds are made
Native people (<i>Native Voices</i>) (<i>First Peoples</i>) (Unclear)	9 (4) (3) (2)	3 crafts/materials (potters, weavers, moccasins, shells) 4 history and survival of native people 1 wall handprint 1 general
<i>Great Salt Lake</i>	7	2 water table interactive 2 lake salt is not mined for food 2 about Lake Bonneville 1 division of Great Salt Lake
<i>Past Worlds</i>	16	2 Ceratopsians 2 Cleveland-Lloyd 1 "dynogator" 3 Ice Age mammals 8 general (diversity, fossils, models) 3 Ice Ages (mammoths, sloths, sabertooths)
<i>Utah Futures</i>	3	2 water management 1 recycling
The building	2	

Table 6. Specific exhibit elements or themes named by subjects completing the prompt *I didn't know, or I never realized....* Numbers may add up to more than the total in some areas, because respondents could mention more than one thing.

A number of trends emerged in the responses, including recollections around diversity, Utah, and animals:

As many as one-third recalled something about diversity

These respondents were impressed by the many kinds of dinosaurs and minerals, or by nature in general. They used phrases like "so many kinds," and "great number," and four used the word "diversity." Five respondents were most impressed with the diversity of rocks and minerals in Utah, while four remarked on the number of dinosaurs found in Utah. For example:

"That there were so many ceratops dinosaurs..." [CQ28]

"How many dinosaurs were discovered in Utah" [CQ49]

"How many gems/minerals we have throughout Utah" [CQ38]

"Natural history diversity in Utah" [CQ47]

Twelve learned something new about Utah

As mentioned above, a number of these respondents were struck with the number of dinosaurs and the variety of rocks and minerals in Utah. Others were more general, for example:

“How diverse Utah is and how rich in history.” [CQ18]

“A lot of Utah history and how things changed over time.” [CQ51]

A few learned new animal facts

These came up in eight comments, reflecting several areas of the museum, from *Life* to Dinosaurs to the brine shrimp in *Great Salt Lake*. The comments are similar in the details of size or specific behaviors that people often find so easy to remember about animals. Three stories were told about arthropods, so it's possible that a docent was doing a special presentation on the days those questionnaires were completed (December 13 and 14). Animal facts included:

“That the Ceratopsians sliced grass and swallowed—not much chewing was involved.” [CQ12]

“Mountain lion whiskers will face forward before the pounce.” [CQ30]

“How large a mammoth truly was. We have a piece of a humerus, but I never imagined how large of a beast it came from.” [CQ42]

“Stink bugs only smell when they are scared” [CQ24]

Several emphasized what the museum itself has done to make their experiences possible

Four people mentioned the docents:

“Dinosaurs. I was impressed by how many they had. I wondered if some were fake, but the person down there said they were all real.” [CQ1]

“How dinosaur models are created. Geological history—great docent!” [CQ4]

“How the interactive displays (erosion wind effect/handprint on wall/draining water of SL Valley basin) could illustrate awareness principles, even to an adult.” [CQ20]

“I was reminded how many different species of dinosaurs were in Utah. I like that the museum seems to keep up to date on the new finds. The docents were very informative.” [CQ32]

It reminded me...

Of the 63 subjects who answered the Cued Questionnaire, 55 responded to this question. As stated before, this prompt opens the door for more affective or memory-related responses. In analyzing these responses from bottom-up, researchers grouped them into six categories: those who expressed *feelings* (of wonder or awareness of change); those who were reminded of *activities* they've done or *places* they've been to; those who spoke of *actions* they've taken or hope to take; and those who spoke of their connections with *native people*. (Other responses fell into none of these categories.)

Categories	Number of responses
Feeling	21
Activity	10
Places	10
Actions	9
Native people	8
Other	4

Table 7. Number of responses to the prompt *It reminded me...* in the categories indicated.

Within each of these categories, other themes sometimes emerged. These themes were most often focused on the state of Utah, diversity, the place of humans in the world, or museum interactives for children.

Many respondents were reminded of a feeling

The highest number of responses (21) could be grouped into the category of feeling. Responses in this grouping were often related to a general connectedness to life on earth, the passing of time, change and evolution, or a sense of wonder:

"Of the ongoing fluidity of life." [CQ2]

"That we are only here on earth for a very short period of time." [CQ22]

"Of how much wonder there is in this world that we lose as we age if we let it." [CQ40]

"Of our place (Homo sapiens) in the ever-evolving world that we live in." [CQ46]

Other respondents mentioned feelings about Utah or diversity:

"Of why I love this state and prospecting." [CQ26]

"That life on Earth has always been very diverse and changing." [CQ12]

One response focused on the opportunities for interaction afforded at the museum:

"[That] when you're as good as you guys are at presenting N.H. [natural history], all ages can engage." [CQ29]

Some respondents mentioned an activity

Ten responses had to do with activities people had done in the past, enjoyed doing currently, or were inspired to do after their visit to the museum. Of these responses, places were mentioned in a general way (school, the south), and sometimes specific activities were mentioned (learning, camping):

"Of camping when I was a kid, of studying when I was in school." [CQ11]

"[Of] hearing about the snowflakes in the past and how I wanted to know more about it." [CQ31]

"[Of] things you see in the movies." [CQ17]

It reminded me... of a specific place—including the museum!

Utah was mentioned on six occasions, and in three instances diversity was also discussed:

"About the diversity of Utah's nature & ecology." [CQ9]

"How old this valley is." [CQ19]

A couple of respondents listed museums as a place they were reminded of. Two museums mentioned were outside of Utah's borders, and two respondents listed the interactive exhibits within NHMU as being good for kids:

"Of museum in LA, only more quiet and less people so you could enjoy more. Enjoyed that children could interact." [CQ18]

Responses sometimes focused on taking action

Nine responses included actions respondents wanted to take. Some of these were a call to conservation actions and a greater awareness of natural resources:

"To make smarter choices & teach kids about what our world will be like in the future." [CQ33]

"How to be more energy conscious." [CQ10]

Respondents also mentioned going somewhere, exploring something, or learning something:

"I need to get out and see a lot more of our state." [CQ38]

"To explore materiality more in my architecture." [CQ57]

Native people

A connection or interest in native peoples came up eight times. Respondents wrote about growing up near a reservation, being especially interested in native cultures, or about new facts learned at the museum:

"Of my love for the ancient peoples. I picture patient hands forming beauty in rock and other things around them." [CQ42]

"About the intermountain Indian School in Brigham City." [CQ39]

Other

Four responses fall into the category of Other. Though these responses don't fit into the categories previously mentioned, they do reflect information respondents were reminded of by their visit:

"[Of] what makes a cell." [CQ6]

"That ape skeletons related to humans." [CQ5; 9-year-old helped with answer]

Conclusions and recommendations for One New Idea

When asked to recall exhibit experiences that took place over the previous one to three hours, these museum visitors were able to recall many specific facts or broader take-away ideas. These “new ideas” represented all the areas of the museum (although *Sky* was mentioned only once). This reflects a good job by exhibit planners throughout the building in delivering their stories in ways that enabled visitors to connect with them in a memorable way.

The museum experience further stimulated these respondents to make personally meaningful connections. They recalled feelings, places, or activities they had enjoyed in the past or wanted to remember to enjoy or take action on in the future. There were also a number who reflected on humans’ place in the natural world.

These results are a good reminder that in addition to their minds, visitors also bring their feelings and memories to a museum; facts and details often come to life in the affective context.

Recommendations

- Use these visitor reflections as part of exhibit planning processes in the future, by writing objectives that include creating wonder, reminding people of familiar places and things, affording actions, and reflecting shared values and universal human concerns (e.g., family, celebration, birth and death, spirituality).



The exhibits reminded people to get outside and explore Utah.

2.2 FINDINGS: EXIT INTERVIEWS (EIs)

As described in Section 1.3 Methods (pages 11-16), the Exit Interviews were centered around questions with a “thematic perspective”: we asked respondents to select two of the museum’s four themes and talk about places in the museum where they might have seen evidence for them. This section describes the responses to those questions, which were asked only during the Exit Interviews. (Two additional questions, which were also asked on the CQ, are discussed in Section 2.3.)

EIs: Evidence observed for each theme

The following four themes were discussed during the Exit Interviews:

- All living things change over time through a process called evolution.
- An ecological web of connections among living organisms and the environment sustains life on our planet.
- Utah’s geology, landscape, and climate have changed dramatically over 150 million years.
- Ongoing research at the Museum and the University of Utah helps us learn about our place in the natural world.

Throughout this section of the report, the themes will be referred to as the evolution, ecology, Utah change, and research themes. (See page 17 for the methods used to develop the themes.)

Researchers began the conversations by placing on the table the four themes printed on individual slips of paper, and arranged in a random order. Researchers then said to the respondents: *Take your time reading these and pick out one or two that you recall seeing or reading something about today.* Respondents were asked to talk about a minimum of two themes, although some went on to talk about additional ones.

Analysis of the results was carried out using both a top-down approach and a bottom-up approach: We compared visitors’ responses to the lists of evidence for each theme provided by the staff (see Appendix 6), and we examined visitor responses for their use of language around the theme and for other places in the museum they felt they saw evidence for the theme.⁸

General findings—which themes were chosen and how often

Table 8 (next page) shows the number of people who chose each theme. Since each respondent was asked to choose at least two different themes, there was a total of 65 choices made by the sample of 30 people. One of the things we were interested in learning about was which themes were uppermost in visitors’ minds at the end of their visit, so we kept a record of which themes were selected first, second, and sometimes third and fourth, by each respondent. These numbers are shown in this table as well, although the sample size is very small for drawing significant conclusions.

⁸ Since visitors’ qualitative responses may be understood in a variety of ways, this analysis is our interpretation, based on our experience. We suggest museum staff also read through the responses verbatim to draw their own conclusions. See Appendix 2 for the database of EI responses.

Theme	Times chosen	Choice #1	Choice #2	Choice #3	Choice #4
Evolution	14	9	3	1	1
Ecology	12	6	5	1	
Utah change	26	10	15	1	
Research	13	4	4	4	1
TOTALS	65	(29)	(27)	(7)	(2)

Table 8. Frequencies at which the different themes were chosen. The “Times chosen” column indicates the total number of times EI respondents chose each theme. The four “Choice” columns show the number of respondents who made each theme their first, second, third, or fourth choice.

The most striking observation from this summary table is that the Utah change theme was chosen a little over one-third of the time (26 times)—nearly twice as often as any of the other themes were selected individually (12-14 times). This finding will be discussed later in this report.

Survey of results for each theme

In this part of the report, we summarize the evidence for each theme that was brought up by the respondents, comparing it also to the lists of evidence for each theme provided by museum staff.

Evolution theme: All living things change over time through a process called evolution. (14 respondents chose this theme)

Over half the subjects who selected the evolution theme referenced evidence listed by the museum. But there were also indications that this theme was sometimes read and understood very broadly: Several gave answers citing items related to people or geology that were not on the staff evidence list, and one named the *Triops* display without explaining. The results are summarized below: first in terms of how researchers ranked the accuracy of the statements, and then in terms of specific items and words that were used.

Researchers identified six fairly clear and specific responses, and three responses that mentioned specifics but were rather vague about how they applied to the theme. Among the clear and specific responses, three cited evidence for the evolution theme in the whole museum. Some examples of clear and specific responses included:

“The flicker exhibit on the 4th floor. It was interesting to see how they separated then came back together again.” [EI4]

“The human evolution. I spent the most time looking at the skulls and the gems. Human ancestry—being able to see all the skulls and you can read about each one... I liked reading about the importance of each find, like the first species or class that was the first to care for the elderly, that was so cool.” [EI11]

“I think evolution is represented well here... A lot has to do with the layout of the museum. If you start from the bottom and go up, you see dinosaurs into early people, then you see *Homo erectus* and all the different skulls...” [EI24]

Examples of accurate but more general responses included:

“That’s more the skulls on [the 4th] floor. My kids love that.” [EI27]

“The volunteer explained how dinosaurs evolved and changed—they got bigger. I didn’t think about it except the volunteers pointed it out.” [EI28]

Only one respondent of the 14 said he had some dissonance with the theory of evolution (although he liked science); another stated that the evidence in the museum for this theme was “not too strong.”

Regarding specifics (rather than general rankings), Table xx shows the number of times and the different ways respondents referred to the evidence they saw for the evolution theme.

Evidence cited for the evolution theme; words used	Times mentioned
Human evolution/skulls	4
Other animal evolution	3
Flicker population interactive	2
The whole museum	4
Used words change or changing	7
Used words evolve or evolution	5
Referred to prehistoric people	3
Referred to geological change	2

Table 9. Frequencies of certain words or concepts mentioned in the 14 responses about the evolution theme. Those in green are specific evidence listed by the museum. The total adds up to more than 14 because some respondents mentioned more than one thing.

The most commonly named specific evidence for the evolution theme were the human skulls (4), other animal evolution including dinosaurs (3), and the flicker story at the population interactive (2). Some respondents apparently had a general memory (the below-referenced exhibit does not address evolution, although the camel and bison are both extinct. Instead, it addresses the question, “What’s the point of horns and tusks?”)

“I also read an exhibit that showed skull fragments—three camels and three bison, and it showed that the animals were evolving over time.” [EI10]

Among the broader interpretations of the theme, some mentioned changes in people:

“We first went into the area... where it had all the prehistoric arrow tips, and bows and arrows, and the bone necklaces, that was pretty cool. What humans did in the past is about how things changed.” [EI10]

“I saw it all over. I saw it in Utah’s people.” [EI1]

And others mentioned geological change over time, seeming to interpret the theme in a way that was similar to the Utah change theme:

“The change in water, lakes, and what it looked like in each era.” [EI29]

“It’s not really evolution, but geology shows how Utah has changed over time.” [EI3]

While five respondents used the words “evolve” or “evolution” in their answers, many seem to have focused on the word “change” rather than the word “evolution” in their reading. This may account for subjects including people and geology in their responses.

Ecology theme: An ecological web of connections among living organisms and the environment sustains life on our planet. (12 respondents selected this theme)

Much of the evidence cited for this theme came from the *Life* exhibit. The responses were split between those who made a statement that aligned with the theme and those who named activities but were not specific about how they applied to the theory behind the theme.

Researchers categorized four responses as strongly aligning with the theme, citing evidence from many places in the museum; one of them just provided an adequate definition of ecology, or how everything is connected:

“I spent time looking at the Great Salt Lake ecosystem. For example, the migrating birds that live in and around the lake. The species that have adapted to living along the shoreline.” [EI15]

“Mostly in the biology section. They had all the insects and the birds, showing how they are dependent on each other. The dioramas, showing different environments recreated perfectly. Probably in the climates... and then you came down here to the future of Utah and there's a lot about sustainability there and how that's connected.” [EI24]

“I saw the web of connections, especially starting in the *Life* exhibit with different kind of animals, the taxidermied animals. I looked at scales and hair under microscope, and could see similarities in the way these things are constructed... Really, the Native American connection starts with their connection to the land, a close tie that sustains. Then you go into the *Life* and *Land* exhibits with that perspective... So then... you went to the dinosaurs and looked at their skulls, heads, musculature. Ancient animals, their jaws and teeth and what they ate. We still have the same kind of thing in our lives with dogs, cows, whatever, even though they are infinitely smaller. And they had a web of things that worked in their time as well.” [EI26]

“Stuff about cells, mitosis—a lot of things kids can touch and do. We looked at the microscopes when the kids weren't using them. It's a lot of ecology, and how things are connected. Everything makes everything else happen.” [EI29]

The rest of the 12 respondents who chose the ecology theme cited as evidence the activities they did, mostly in *Life*, but also in *Land*; none described how the activities related specifically to ecology. All but one of these responses came from groups with kids (AK).

Regarding the frequency with which specific activities were cited, Table 10 (next page) shows the number of times different areas or subjects of the museum were mentioned by the respondents.

Evidence cited for the ecology theme; words used	Times mentioned
<i>Life</i> /Level 4 (water lily, dioramas; others as mentioned in the text below)	8
<i>Land</i> /geology	2
Native Americans	2
<i>Great Salt Lake</i>	1
<i>Past Worlds</i>	1
<i>Utah Futures</i>	1
Used words sustains or sustainability	2

Table 10. Frequencies of certain exhibit areas, activities, or concepts mentioned in the 12 responses about the ecology theme. Those in green are specific evidence listed by the museum. The total adds up to more than 12 because some respondents mentioned more than one thing.

Those citing the *Life* exhibit as evidence called it the biology section, *Life*, or just the 4th floor. Items from *Life*, both specific and general, were easily named: The cell puzzle was mentioned four times and the dioramas twice, along with “different kinds” of plants and animals. Other items from *Life* mentioned once were algae, the water lily, DNA strands, keratin, human/wolf skulls, insects/birds, taxidermied animals, mitosis, microscopes, and the tarantula:

“We looked quite a bit on the 4th floor. We enjoyed looking at the water lily blooming in the tube, and the tarantula which was out and moving around quite a lot. [EI3]

“That's on Level 4. We never go to Level 5. We like the cell puzzle. The human skulls. The wolf skulls.” [EI21]

“This one we definitely love to do [points at theme.] My son loves to do the cell, the hands on... putting the cell together. He loves looking at the different skulls on that same floor; also the algae and different biomes you have up there. [EI27]

The three references to the *Land* area also focused on the interactives; two groups said they saw this theme while going from the 4th floor to the 3rd floor, but without explaining:

“We saw it when walking from 4th floor down to 3rd. We loved how interactive everything is. We played with the water, wind and sand, just learning about how it changed Utah.” [EI7]

“The more interactive one about the history of Utah and how it's changed over time, such as climate change, and all the different animals. [Subject clarified this was the biogeography monitor]. [EI8]

While museum staff cited *First Peoples* as being “all about people adapting,” only one of the respondents named this area, and rather vaguely:

“Indian artifacts, the things they found in caves.” [EI9; husband of main subject]

Utah change theme: Utah's geology, landscape, and climate have changed dramatically over 150 million years. (26 subjects selected this theme)

When asked to choose a theme they saw evidence for in the museum, subjects chose the Utah change theme one-third of the time and twice as often as they chose any of the other themes. Of these, only four cited no evidence for the theme, giving answers that were too vague to be included in the analysis.

Researchers also noticed that in selecting the Utah change theme, more respondents described it out loud, rather than just touching the slip of paper as was the norm for the other themes. They said things like: Utah's geology, landscape, and climate; Utah specific things; and "The one that jumped out to me was the dramatic change that occurred over millions of years." The words used in these phrases also appeared many times throughout the conversations, particularly the words "change" or "changing," which were used by over half of the subjects.

Responses providing evidence for the Utah change theme include many long answers citing several locations in the museum, as well as numerous answers naming specific interactives or labels. The fact that this story is about where people live (Utah) seemed also to play a big part. At least seven mentioned places in Utah where they made a personal connection to this theme:

"[The museum] shows a lot of change in Utah. It was underwater and then not. It explains why we live on the bench [ancient shoreline] and have nothing but sandy soil. Some of the displays made me want to go camping. We go down to southern Utah and Moab." [EI29]



Several people cited the Great Salt Lake water table as evidence for change in Utah.

When asked to talk about the evidence they saw for this theme in the exhibitions, two-thirds of the respondents named the *Land* area, or one or more things specific to *Land*. (This concurs with evidence listed by staff, who said this theme was very strong throughout *Land*.) The *Great Salt Lake* water table was also named often. The table below shows the items and words mentioned most frequently in relation to this theme.

Evidence cited for the <u>Utah change</u> theme; words used	Times mentioned
<i>Sky</i>	1
<i>Land</i>	32
Globe	(7)
Rocks, sediments, layers, glacier	(6)
Water erosion table	(5)
Utah over time images (ramp)	(5)
Sand dune wind interactive	(3)
Then and Now photos	(2)
Shifting plates mechanical interactive	(1)
Plant distributions	(1)
Biogeography monitor	(1)
<i>Great Salt Lake</i>	6
Water table	(5)
<i>Past Worlds (dinosaurs)</i>	5
Whole Museum	3
Used words "change" or "changing"	13

Table 11. Frequencies of certain exhibits, words, or concepts mentioned among the 26 responses about the Utah change theme. Those in green are specific evidence listed by the museum. The total exceeds the number of respondents because some mentioned more than one thing.

In *Land*, the globe, the water erosion table, and the Utah-over-time images (on the ramp) were some of the exhibit elements most often cited. Three respondents referred to the globe together with Utah-over-time:

"Most interesting for me was the changing of the globe. There's one section where you have different pictures of Utah and overlaid the ocean and mountains and how it changes in each period. That goes with the Omni globe, seeing how it used to be totally water and then dry in the Jurassic period, then wet again; just seeing the different landscapes is very interesting. I connected them with the globe because I saw on a previous visit that the ocean went right through the U.S., then later I saw the panels. Seeing it again was awesome. I never knew that." [EI14]

Many answers also focused on the rocks, sediments, and landscapes featured in the built-out scenery and interpretation:

"The *Sky* exhibit, but mostly the things in the *Land* exhibit. It talks about sediments and topography and things like that, and how it's changed. I really liked watching the globe and things projected on it that show change. I hike a lot, especially in the Ogden area, and I like seeing the shifts in sediments and rock layers there." [EI24]

"The iceberg—no, the glacier—the big picture on the wall as you come down the ramp. It talked about how the glacier formed the u-shaped valley." [EI8]

Several respondents pulled together items from around the museum that helped them construct a complete story:

“Near the marshland exhibit, the lake interactive where you can see how it flooded away. The museum is definitely focused on Utah. I wasn’t looking for dramatic change. What I interpreted more was the different dinosaur periods and then you come up to this period, and then the *First Peoples*, more of a natural timeline. Also on the thing in the front [gestures to topo map], I read about how the population will be doubling by 2050.” [EI18]

“The layers and the rocks... I was interested to see how valleys and mountains formed—like the windblown sand. We have a cabin in Central Southern Utah near Capital Reef [National Park], and all day [at the museum] my mother would point out different rocks and formations we see there... And walking down the ramp, it shows different borders, the stages of Utah. Even the layers here [gestures around Canyon area] are... it kind of echoes natural things.” [EI30]

A few felt they saw the Utah change theme in the whole museum:

“The sequence as you travel through the museum—it’s obvious.” [EI15]

A DC described one visitor’s response to the question of where she saw the Utah change theme that day:

Subject opens her eyes wide and waves an open hand as if to say “Where do you not see it?” [EI12]

Research theme: Ongoing research at the Museum and the University of Utah helps us learn about our place in the natural world.” (13 subjects selected this theme)

For those respondents who cited the research theme, the evidence most commonly provided was the Paleo Lab, the view into the collections area, and individual stories from *Past Worlds*; one subject mentioned the Fremont excavation in *First Peoples*. Analysis of the responses also suggests that some subjects saw the research story as an ongoing process of discovery and preservation of the natural world and how we learn about things. Table 12 summarizes the frequency with which certain subjects were mentioned as evidence for the research theme.

Evidence cited for the research theme	Times mentioned
<i>Past Worlds</i>	
Paleo lab	8
Cleveland-Lloyd	2
New dinosaur	2
Collections window (3 rd floor)	4
<i>First Peoples</i> (Fremont)	1
Whole museum	4

Table 12. Frequencies of certain exhibit areas, words or concepts mentioned in the 13 responses about the research theme. Those in green are specific evidence listed by the museum. The total adds up to more than 13 because some respondents mentioned more than one thing.

Both overtly and covertly, respondents seemed to connect the work seen in the Paleo lab and storage area with research. This might in part reflect the stereotype of scientists wearing white lab coats, since in both these areas, workers in white coats are often visible:

"I loved the fossil labs with researchers in there cleaning the fossils." [EI23]

"Seeing the vault upstairs, the work being done. That's really impressive." [EI16]

But most of those who cited the Paleo Lab connected it with dinosaurs and the finding of new fossils, an always high interest in this museum's audience:

"I connect it with the dinosaur area, there's that new Tyrannosaurus up there. The new dinosaur, the new fossils finds, and the lab where they're cleaning things up. We'd love to see more of that." [EI22]

"Lab area where they work on dinosaurs. After seeing that, you know that a lot of work goes into getting them out on display." [EI9]⁹

Several respondents liked seeing the actual work being done, seeming to see it as ongoing:

"The paleo room. You could see that paleontologists are still excavating there. [EI18]

"[The kids] always want to get into the storage room back there. There's always an interest to see the real stuff... to see the actual work being done." [EI22]

"I can see they are learning more, getting more fossils, understanding more. I'd like to know more about where the individual fossils were discovered." [EI2]

A few respondents saw the research theme all over the museum; during conversations, a couple of subjects broadened their thinking to say that when the museum is helping them to see the process of how we figure stuff out, that's research, whether in the museum or out:

"Having people doing ongoing research mentioned consistently in the exhibits is mostly where I was impacted relative to that statement. The change from T Rex being displayed upright to 'streamlined' is a reflection of how research has progressed." [EI23]

"The window into the warehouse, with stacks of stuff. It reminded me that a lot of stuff on display is for public interest, but that a lot of the real work goes on behind the scenes. Then when you just came in, the guy working on the fossils and stuff. I guess I just have a general sense of wonder about how we figured all this stuff out. For example, I saw stuff on carbon dating that told me we can get a relatively good window on how old things are. With the sniffers, too, we wondered how you get a smell from a prehistoric thing. A passing visitor (turned out she was a biochemist) told us you can get traces of chemicals to reconstruct that." [EI14]

"The Paleo Lab, seeing that they are still collecting. And going back to the first [theme] about evolution, there's still a lot we have to understand. And then, the labs are doing more work on it—I guess everything ties back to evolution. With gems, it's not just presenting what something is, but how you get to something, like in the diamond case. So maybe it's not the research at the museum, but it's the museum helping me learn

⁹ This highlights another common visitor misconception, that most of the behind-the-scenes work at a natural history museum is done in order to create the exhibitions (Gyllenhal 1996, 1998).

about stuff, the progressive steps to get there, the geometry of all the minerals. And the [Cleveland-Lloyd] mystery, figuring out how those dinosaurs died. The whole museum helps us learn about our place in the natural world. The geology, pottery, jewelry, bones, bone-shaping—that was research too. As far as 'ongoing' research, that's most evident in the labs. What ya'll have out here is ya'lls research." [E111]

However, one respondent reported that he wouldn't have noticed the research stories or connected them with the museum, except that a companion had prior knowledge of it.

Interviewee would not have noticed but his aunt pointed it out to him. She commented that she has been here many times and "Knows what's on the other side" (gesturing toward the north side of the building.) [DC comment on E126]



"Seeing people working in the lab was the evidence I saw for research. I wasn't aware that the museum was part of the university. I think it's a good theme to have because it reinforces a love of learning, both in school and out of school. When I saw the genetic code exhibit here, I thought 'Oh, we're not that different.' [meaning humans and other animals]. It reminded me of some of the genetic research that's going on."

Conclusions and recommendations for understanding of museum themes

In this part of the study, EI respondents (n=30) were presented with four themes considered critical by the museum and asked to cite the evidence they saw for the themes. The four themes have been listed and discussed on the previous ten pages and are referred to here as the evolution, ecology, Utah change, and research themes.

Most of the respondents connected each theme strongly with certain areas of the museum and with specific activities they encountered. Ecology was most often connected with *Life*, and Utah change with *Land*; evolution was seen most in certain exhibits in *Life* and *Past Worlds*; research was seen in the Paleo Lab and storage areas as well as *Past Worlds*.

While some groups with children had a grasp of the thematic content, many others seemed less interested in the content and more interested in talking about activities the kids spent time doing. In some cases, the themes AK groups selected were probably influenced by the available interactives.

Responses to the research theme provided an interesting picture of some visitors' attitudes and beliefs. Subjects named several specific research stories in the museum as evidence, primarily in *Past Worlds*. The Paleo Lab and the collections storage window inspired many respondents to express appreciation for seeing the actual work being done, and the thought that research was an ongoing and exciting endeavor. A few went on to define research more broadly as any place in the museum where they could see the process of how we learn things or know things (such as carbon dating or the geometry of minerals).

For the evolution theme, while over half cited evidence accurately, some seemed to focus on the word "change" rather than the word "evolution" in their responses, and they answered rather generally. In this small sample, repeat visitors (R) selected the evolution theme more frequently than did first-time visitors (F), possibly suggesting they had a greater familiarity or acceptance of evolution as an integral part of this museum. This finding conforms to Randi Korn's front-end study in which three-quarters of the subjects she spoke with in the old museum felt evolution was an appropriate theme for the Utah Natural History Museum (Korn, 2005).

For the ecology theme, the majority of respondents named as evidence the activities they or their children liked doing, mostly in Life but also in Land. This confirms the findings of previous studies that these areas particularly appeal to children, and that AK groups are often focused on the kids and what they enjoy doing. Perhaps it also suggests that ecology (or the "web of connections"), while it is an oft-repeated (even formulaic?) story in education and media today, it might still remain a vague concept for many people.

While the evolution and ecology themes are about overarching theories for understanding and studying the natural world, the Utah change theme touches on more of a story, and a story about a place. Many people named multiple places in the museum where this theme was evident to them, connecting it with what they saw and with their personal experiences in Utah. Repeat visitors selected this theme more than twice as often as first-time visitors.

Overall, the results of this section of the study suggest that "change" is one of the most prevalent themes these visitors saw in the museum. Respondents chose the Utah change theme more than twice as often as they chose the other themes, using the word change in over half of their responses. With the evolution theme there was only a moderate identification with the process of evolution and the word evolution, but the word "change" again appeared often, and several related the theme to changes in the land or in Utah's people. The subject of change came up with respondents in discussions of ecology, too, even though the word was not in the theme statement; one-quarter of those who chose this theme cited evidence for activities and interactives that helped them see how Utah changed over time.

This result was interesting for the researchers to see, since it came after their proposal of a Big Idea featuring change, which had emerged from their pilot testing of the original theme statements (see page 17.) As stated previously, the proposed Big Idea is:

Utah's geological record and evolving biodiversity reveal millions of years of changing natural history.

Recommendations

- Present the Big Idea (or something similar) in the foyer and on the map to help orient visitors to the museum content and experience. Even though the general content seems to come through within the exhibits and many visitors came to it without help, the Big Idea statement could provide a strong orientation for everyone coming in the door.
- In assessing whether visitors understand the museum's intentions thematically, consider the words these subjects used and didn't use in talking about each one. Which areas did they relate to each theme? What particular understandings or misunderstandings did they bring to each? Can these understandings be used to help improve the visibility of the themes?
- Consider reasons why this group of respondents did not connect the ecology theme with the *First Peoples* gallery: Is unclear messaging in *First Peoples* the problem, or a vague understanding among general visitors of the ecology theme as stated? For example, is "adaptations" seen as part of ecology? Or is there some other reason to explain the disconnect?
- When developing new experiences, especially for children, define the learning objectives clearly and realistically, and use formative testing to improve the chances that for families who pay enough attention, the objectives can be achieved.



2.3 FINDINGS: CUED QUESTIONNAIRES + EXIT INTERVIEWS

This section of the report presents results for a question asked of both the Cued Questionnaire and Exit Interview respondents, about the museum’s mission. It also summarizes comments made by both groups in response to a final prompt of *Anything else?*

CQs + EIs: Mission—Humans’ place in the natural world

For the final question on both instruments, we asked respondents to read the NHMU mission statement:

To illuminate the natural world and the place of humans within it.

We then asked: *Was there a place in the museum that made you think about humans’ place in the natural world?*

For both groups, this approach was identical to that used in the Exit Interviews in general (see page 6)—asking respondents to cite any evidence they saw at the museum for a theme or principle; in this case, the theme was *humans’ place in the natural world*. The results for this question were very similar between the CQs and the EIs so they will be presented together, with any differences pointed out in the discussion.¹⁰

Of the 93 total participants, over three-quarters (72) provided responses that the researchers could analyze. We eliminated 17 answers because they were left blank, or the responses were vague or unclear. An additional four subjects said they saw NO evidence for human’s place in nature; one simply said “no,” but others gave various reasons:

“Not especially. I enjoyed the heights and drama of the exhibits.” [CQ16]

“No, not really, however I do want to go outside and hike and camp again soon.”
[CQ30]

“We only visited a few floors—mostly dinosaurs, so no to this question. ☺” [CQ51]

The 72 responses to the question were first analyzed from the bottom-up, and then from the top down (comparing subject responses to those of NHMU staff members.) The bottom-up analysis yielded two general groupings of responses—those that cited specific places or exhibit elements in the museum, and those that *reflected* on humans’ place in the world.

An example of a response focused on an exhibit space or element is:

“The biology section of the DNA.” [CQ22]

An example of a reflective answer is:

“The fossils show me I am just another Being.” [CQ47]

¹⁰ During the course of the EI conversations only, subjects were also asked *After your experiences here today do you think the Museum achieved its mission?* A summary of the results for the broader question alone are in Appendix 8.

Some responses had elements of both, and the results will be presented together. The top-down analysis follows the Results section.

Results

When asked to cite evidence they saw during their visit for humans' place in the natural world, respondents cited most areas of the museum (see the table below). Sometimes a specific exhibit or element was called out; other times the "whole museum" was mentioned. In addition, researchers categorized about one-third of the 72 responses as containing reflective content.¹¹

Exhibit Area	Number of times mentioned
<i>Life</i>	22
<i>First Peoples/ Native Voices</i>	17
<i>Land</i>	10
<i>Past Worlds</i>	10
<i>Utah Futures (Carbon Case)</i>	5(1)
<i>Sky/5th floor</i>	4
<i>Great Salt Lake</i>	4
Whole museum	10
Reflective responses	24

Table 13. The numbers of times areas and elements of the museum were mentioned or reflective remarks were made in response to the question: *Was there a place in the museum that made you think about your place in the natural world?* The total equals more than the total sample (72), since some responses included more than one exhibit or type of answer.

Life

The most frequently cited evidence for humans' place in nature was in *Life*. The items in *Life* mentioned most often were the cell and DNA exhibits, along with the human skulls:

"Cells and the human body" [CQ1]

"The DNA/cell exhibit" [CQ60]

"Obviously, the human ancestry and skulls." [EI11]

"I thought about that looking at the human skulls and the human growth, I thought about that. I thought about that too when [my son] was tracing the DNA of the orangutan." [EI23]

¹¹ A little over one-third of the Exit Interviews (11 out of 30) and about 1/5 of the Cued Questionnaire (13 out of 63) responses were categorized as reflective. The difference between the EIs and CQs was not surprising, based on the fact that the EIs were face-to-face conversations allowing respondents more time to muse and speculate, without having to write anything down.

Some respondents cited animals and nature, including the dioramas. Two of the three who named the dioramas mentioned the cool desert ecosystem. This could have been because it was the main diorama they saw (due to its prominent location) or because it represents the local environment:

“Where they were showing the insects. They are very much a part of our current world.” [CQ24]

“Level 4, where it talks about the different environments and all the animals you can see.” [CQ21]

“Cool desert ecosystem model.” [CQ27]

Several respondents who cited *Life* as evidence for humans’ place in nature reflected on where they came from and their connections with all of life:

“The life lab area was a great way to look at and understand where we came from.” [CQ8]

“I like the part that says everything evolved from one source and goes on. It’s mind-boggling!” [EI9]

“The museum starts when we get back to peoples and places and the things we have in common and how we’re all connected. Like the DNA chart—we see how connected we all are, and you can’t move or change one thing without affecting others.” [EI13]

Native and prehistoric peoples

The *Native Voices* and *First Peoples* exhibits were cited about equally; three additional responses mentioned native people but without being clear about which exhibit they were referring to. Many of the respondents included here (whether CQs or EIs), when asked about “humans’ place in nature,” seemed to be drawn immediately to mention exhibits about human beings.

“Mostly the first place we went, where all the prehistoric human stuff was.” [EI10]

“The archeology displays of everyday things and how they were made. Pots, clothes.” [CQ28]

“The archaeological stuff shows that, especially when showing beads and all that kind of stuff, shows how people work with their environments and they live within their environments.” [EI26]

“In the Native American... the dwellings and that. It just tells how they lived and how we’re living and made me think of it.” [EI28]

Respondents citing the native peoples galleries sometimes reflected on feelings of identity and empathy. These seemed to come mostly from experiences in *Native Voices*:

“Mostly the fifth floor—just thinking about how easily ‘your way’ of life can be changed” [CQ12]

"Yes, the Native American exhibit and how they lived, it makes me want to preserve their land." [CQ14]

"Native American exhibit—even though it's not my heritage, I feel responsible for how they were treated and I'm saddened in a way what civilization did to the individual cultures." [CQ20]

"Yes, the fifth floor and how we could pass our stories and culture to our kids." [CQ43]

Land and Past Worlds

While the specific evidence cited from *Land and Past Worlds* ranged from tectonic plates, to gems, to the "dinosaur museum," many of those answers shared a common feeling about change over time and the scale of human existence.

At least six seemed to find humans' place in nature in the changes taking place in Utah over short or vast periods of time, and the formation of the place where they live:

"On the 3rd floor, I think, that showed how the landscape changed over time." [CQ63]

"The before and after pictures, because it showed the human effect on the plants and the environment." [EI10]

"Illustrations of the formation of Utah and how it came to be where it is." [EI11]

Others were stimulated by their experiences in *Land* and among the dinosaurs to reflect on scale, seeing humans in contrast with colossal beings, massive forces, and imponderable time frames. The word "small" appeared regularly:

"Yes, the dinosaur timeline made me realize dinosaurs lived on Earth for hundreds of millions of years, whereas humans have been around for a fraction of time." [CQ21]

"Absolutely. Playing in the excavation interactive, with a view of the whole dinosaur exhibit [respondent opened her arms wide], I was humbled." [EI3]

"The land section made me think about my place and how small it is." [CQ25]

"It's interesting to think that humans have only been here a very short time, and the dinosaurs and all the other things have been here for millions and millions of years. Kind of makes me think, well how long will humans be here? 'Cause obviously the dinosaurs didn't stick around!" [EI29]

Great Salt Lake and 5th floor

When asked about humans' place in nature, a few respondents seemed to think mostly about local features and phenomena:

"Many places—the water feature showing Lake Bonneville, the earthquake displays, the skyline. It's fun to start at the top seeing the valley, then walk down." [CQ19]

"The exhibit about the *Great Salt Lake*—we live very near it in Syracuse." [CQ50]

"The docent pointed out the dinosaurs found in Utah." [CQ56]

One respondent found the museum's physical location helpful in contemplating humans' place:
"Well, I think we're a little disconnected from the natural world! We're also frequent visitors to the garden next door—we take hikes. The placement of the museum here builds that connectedness, lets [the kids] know that these things have something to do with each other." [EI26]

Utah Futures and conservation issues

Five respondents to this question cited *Utah Futures*; two referred to the story on plastic waste while one seemed to feel that *Utah Futures* was the main area in the museum that concerned humans' place in nature. Other conservation issues were mentioned briefly, including references to carbon footprint, population growth, and climate change:

"We didn't spend much time in 'our place as humans.' [Subject clarified she was referring to *Utah Futures*.] It's a good tie-in for 'our place in the natural world,' but I don't think people understand that station." [EI26]

"The waste part is hitting home. I'd like to see the Pacific gyre, where plastic is more present than plankton, become more illuminated." [CQ31]

Several participants reflected on the impact humans make on the Earth and that we have a responsibility to care for it:

"Up on the top deck, looking out at the inversion, juxtaposed with the climate change information. We're talking about climate change and talking about trying to be responsible and we see there are some things that, you know, we don't have an accurate understanding of the world around us, how we can't outsmart things like that." [EI24]

"It was certainly emphasized as you came out [of the exhibits] that what we do changes the world, you know, with global warming and trash not going anywhere." [EI29]

A few thought about both scale and impact:

"All of it. We are very small and insignificant, but can change the world for better or for worse." [CQ42]

"Yes, while walking through dinosaurs, I was impressed at how insignificant we are, yet the huge impact we have on our world." [EI4]

And a couple of EI subjects who were asked specifically, *What do you think is your place in nature?* reflected more strongly on human impact on nature and our responsibility to care for it.

"I think human's place is to understand it and take care of what we've got. I sometimes think the conservationists or environmentalists think that human's place is to get out of the world so we can go back to the way it was. And I think the displays show that humans have an impact on their environment—it's valueless—we grow plants we hunt animals, we do all kinds of things. There's going to be change, just by us being there. I don't say that's good or bad. We do need to make sure we're not making it uninhabitable for ourselves—like the air today." [EI10]

The whole museum

As before, the museum in general seems to carry a message that visitors connected with. Some participants remarked that the progression of exhibits or the visit experience on the whole gave them evidence of humans' place in nature:

"Yes, the exhibit as a whole. Takes you from the early times to present and really gives you a sense of the vast history." [CQ32]

"Definitely. The linear progression of the exhibit really makes you understand the experience." [CQ57]

Comparison with staff responses

Visitor responses to the question about evidence for humans place in nature paralleled some of the responses provided by museum staff when answering the same question. Commonalities are mentioned below, and responses from staff members are in italics.

Some visitors talked about issues of scale and impact, and so did staff:

Staff statement: Past Worlds gallery makes me reflect on how deep Earth's history is, what a short time humans have been around, and what an impact we've had in that short time.

Some visitors talked about appreciation of local geography and geology, and so did staff:

Staff statement: Many, many places. The Great Salt Lake exhibit, and how much the valley has changed in recent times (geologically speaking), the draining of Lake Bonneville.

And both talked about the whole museum:

Staff statement: The whole place does!

One staff statement stressed human adaptations to nature:

Staff statement: Human adaptations to their natural and social environment and how these adaptations have changed through time.

Although subjects responding to this question expressed appreciation for many of the stories and objects included in *Native Voices* and *First Peoples*, only two specifically noted seeing evidence of human adaptations to nature.

Humans and nature as separate subjects

For some respondents, stories of the natural world and of human existence might be seen as separate. Several subjects thought only of human-related exhibits and areas (including the human skulls in *Life*) in response to this question. A few even implied that those were the only areas that could possibly pertain to the question:

"They do a good job on the natural world. And the place of humans within it? I don't know I got anything on that... other than the early humans, and the artifacts." [EI2]

"At the beginning, about the population growth of Salt Lake City. Then the First Peoples. I didn't go on to see whether there is a section on the present day, how we're impacting it." [EI18]

"If we hadn't spent so much time with the dinosaurs, we would have spent more time on the top seeing the natural world. Because of where we started, we spent more time on the geologic and paleontological history of the area, which is really unique. But I didn't think we saw humans' place in nature, but more about the history of this area."
[EI16]

"For people in past times, everything was stone, bone, animal skin... then we turn to wools and textiles and clothing manufacturing, so that becomes something of greater technology. I didn't really think about my place in the natural world, just that humans now turn to something better." [EI26]

One father and son pair referred to humans' place in the natural world as the ways in which we study and investigate it:

[Father] "I hadn't thought about it, but I suppose so because there's a lot of the exhibits that include the process of how we discover things..."

[Son] "The biggest thing that sticks out to me is the picture of the drill rig on the salt flats. As a field geologist, I live in the natural world, and I think the most meaningful way we interact with it is how we record it and investigate it." [EI23]

It was unclear whether these respondents disagreed that humans are an integral part of nature or didn't recognize the full scope of the statement.

Conclusions and recommendations for Humans place in nature

A museum's mission statement is a statement of intent: their hope for the impact they would like to have on their audiences. This question asked visitors to tell us where in the museum they might have seen evidence for stories about humans' place in nature.

In response, participants reported seeing humans' place in nature in many places all over the museum. Some responded specifically by naming an area or exhibit element, especially in *Life*, *Native Voices*, or *First Peoples*. For one-third of the sample, the question also evoked a reflective response—about connections, empathy, the scale of human existence, and human impact. For some of the EI subjects, the more we talked with them, the more they reflected on issues of human responsibility. Yet the results also suggest that for some other subjects, stories of the natural world and of human existence might be seen as separate.

Recommendations

- Consider how you might want visitors to define "humans' place in the natural world." Talk with visitors in more depth about how they view humans' place in the natural world.
- Post the mission statement somewhere in the museum. It is a strong statement of the museum's intended impact, and in these conversations, stimulated some subjects to think more deeply about their place in nature.
- Consider ways to increase the visibility of the message that humans are closely integrated and adapted to the natural world, by making it overt in introductory panels or elsewhere.

- Interview visitors leaving *First Peoples* specifically, asking them what messages they found there. See how well those match your defined outcomes.
- If possible, explain the connection (if any) between the prehistoric peoples represented in *First Peoples*, and the modern people of *Native Voices*. It might be an opportunity to represent how adaptations to nature have changed through time.



Many people found 'humans' place in nature' in the *Life* exhibit.

CQs + EIs: The last question—Anything else?

At the end of each Cued Questionnaire or Exit Interview, respondents were invited to write down or talk about anything else that was on their minds. A total of sixty subjects (65%) responded to this invitation. (About half of the CQs took the time to write something; for all but two of the EIs, the conversation made it easy for them to contribute a final thought.) Of these 60 responses, three-quarters (44) were positive. Others expressed complaints or asked questions.

Positive responses—praise and salutations

Positive responses included praise for the experience, content, and architecture of the museum, as well as specific exhibits such as the triceratops wall, the "sky stairs," the pottery puzzles, and the hominid exhibit. Five mentioned a docent as being a very positive part of their experience:

"This museum is spectacularly fascinating, engaging. Presentations are clear: scientific and poetic, gauged to involve young and old without any sense of over simplification or confusing, overly complex detail." [CQ2]

"I enjoyed seeing 'tour guide' people get into their informative selves, and inspire some of the kids that were with them." [CQ7]

"This museum does an incredible job of integrating architecture, art, texture, and colors to make the exhibits and atmosphere aesthetically pleasing. The interactive displays help to engage kids and adults alike." [CQ34]

"I really liked the hominid exhibit, that's one of the best I've seen anywhere. It was so impressive I snapped a photo and sent it to my anthropologist wife. She got excited too." [EI23]

Nearly half (18) of the positive responses focused on the interactivity, or the enjoyment children had at the museum:

"My children love the cell displays/puzzles. My son asks when we are coming back to see the dinosaur bones and they love to play in the labs. I wish I would have been able to learn about cells with those puzzles. I would have done better on the test in 8th grade!" [CQ50]

"We've seen just about everything here. My great-grandson (he's 4 now) wants to be a paleontologist and asked so many times to come here that I decided to buy a membership." [EI28]

Two compared the museum favorably with Chicago's Field Museum:

"The only place similar to this in my mind is the Field Museum in my home town of Chicago. But I'd pick this one eight times out of ten. The building is much more impressive and exhibits are more kid-friendly. There is no better combination in Salt Lake City than this museum and the Red Butte Gardens." [EI16]

Questions, complaints, and reflections

A few of the respondents had questions:

"Why are your solar panels not cleared of snow? It hasn't snowed here in many days. You must be buying a lot of electricity." [CQ47]

"Is the family tree line not linked to primates on wall?—It's been scratched off by a visitor, or do we not know for sure?" [subject provided sketch on CQ form] [CQ20]

"Are the ants dead in their exhibit dome?" [EI6]

Six respondents also had complaints or suggestions:

"The smell exhibits didn't seem to work—the puff of air didn't come out." [CQ20]

"I found myself wondering if all the bones in the exhibits are real [if] it wasn't marked." [CQ41]

"Can I get on a soapbox? I was affected by the inaccurate representation of the contour lines on the sidewalk out front. I know they are supposed to represent the native terrain prior to excavation for the building. But a 6th grader coming up will see the contour line snaking down the ramp and will get the wrong idea. I know why they did it, but it's wrong and could get stuck in the kids' heads. There should be a prominent plaque saying this is where the hill used to be. And these contour lines are not accurate to this terrain." [EI23]

"There was not as much of a conservation message as I would have liked to see, although we didn't make it all the way to the top. We went through the past—dinosaurs and *First Peoples*, but then would have liked a wrap-up with 'this is where we're headed.' A call to action." [EI18]

Two respondents wanted more seating, especially where parents could watch their children play. And two raised issues of orientation:

"I was told to start at the top, but wish I'd started at the bottom. I relate more easily to the content on the first two floors. I like history and don't relate as much to the 'life' content. I could see value in being able to come multiple times and take it all in." [EI2]

"I thought the suggestion to start on the 5th floor was good until the end. I had the sense I was going backward. It was a little confusing in the dinosaur area." [CQ41]

Finally, some respondents had some thoughts about museum offerings, as well as the research program:

"The section with the RNA molds would be even better with a docent @ this display. 10-15 minutes with the children would really enhance their understanding the base-pairing & the coding for the amino acids." [CQ52]

"[The kids] are intensely interested in ancient peoples here, to bridge the gap, because we've seen cliff dwellings and stuff like that. When you tell the story of what might have been happening in that space, they go home and set it up themselves. When I think about how the museum can fill the continuum from now to those ancient times and architects, various things about ecology and ancient creatures, and how that created the world that we live, I think it's pretty interesting." [EI22]

"Lately I've been reading online papers about archaeology. Like, medicine, there's an art and a science to it. The end keeps changing. We think we know something, but new information comes along. The Museum is a touchstone to see where we're at." [EI13]

Recommendations for Anything else?

- Review seating options near popular interactive areas.
- Plan museum orientation so that visitors can choose for themselves whether they want to begin at Level 2 or Level 5. This would particularly allow older people (such as EI2 quoted above) or people with kids to decide for themselves where they want to spend their time and energy.
- Have a temporary sign to explain that the ants in *Life* die off each winter and are replaced.

PART 3. DISCUSSION AND RECOMMENDATIONS

3.1 OVERVIEW

The Exit Interview Study (EIS) was the third in a series of “whole-museum” studies, designed to explore impact and visitor usage throughout a whole museum rather than in a single exhibition. The Natural History Museum of Utah offers a unique opportunity for this type of broad-scale study. NHMU’s topical exhibit galleries and the building itself are designed to tell a complete natural history story, whether visitors go from the top floor to the bottom or vice versa. The building itself defines and amplifies the whole experience, offering the connected story in a linear way from either direction, while offering many options for personal exploration and discovery. Results from an earlier study (WMTS 2013) showed that the majority of visitors surveyed saw the whole museum in one visit, and when they came again with friends or family, they tended to do the whole thing again. Other repeat visitors made their own pathways, based on who they were and what their particular interests were.

After discovering how long visitors stayed in the museum (STS 2012) and what they did and saw on a visit (WMTS 2013), the present EIS took a look at: 1) whether visitors understood the messages defined by the museum for the overall experience, and 2) whether the experience was having the intended impact. The EIS used two open-ended research techniques—Cued Questionnaires and Exit Interviews, asking subjects about the purpose and impact of the museum, a new idea they might have discovered or recalled, and whether they saw evidence for the museum’s themes—evolution, ecology, Utah change, and research—as well as humans’ place in nature as stated in the mission statement—*To illuminate the natural world and the place of humans within it.*

The results of this study were positive: The majority of visitors sampled in the two different approaches were able to describe the purpose and impact of the museum in ways that aligned with the museum’s goals. We heard many details about what visitors found engaging or memorable, what new ideas they had encountered that day, and the ways in which the museum itself offers unique affordances for learning. We also heard things about where visitors understood the message in their own ways, or where the themes were less apparent than the museum might have hoped for.

Altogether, the three studies also laid a foundation for a demographic profile of NHMU’s visitors. With a total of 609 subjects over two years, the museum now has a snapshot of who their visitors are, what their interests are, and how and when they visit the museum. While the demographics (taken in April 2012, October 2012, and December 2013) were similar for all three studies, this latest study suggests a possible increase in the number of repeat visitors. Since one of the museum’s goals is to increase the proportion of repeat visitors, year-round visitor surveys could establish whether this is a consistent trend or a seasonal effect.

3.2 DISCUSSION

This section summarizes the results of the EIS according to a number of trends we saw and observations we made during analysis. (Specific data supporting each of the trends is cited in Part 2 Findings, pages 23-59.)

"Change" emerged as the strongest theme

The story of geological, biological, and cultural change through time came up repeatedly in visitor feedback, whether in discussions of the themes, in describing the museum's purpose, or in considering humans' place in nature, where some respondents reflected on the scale and impact of human existence in the vast reaches of time. While some respondents stressed the need to understand change as it reflects on our future, quite a few seemed to stress Utah change only as it occurred in the past. As in Randi Korn's front-end study for *Past Worlds* (Korn 2005, page iv), some seemed to suggest that a natural history museum was ONLY about the past and did not or should not concern the present or future. This could be relevant to the museum, depending on how important it is to you to lead visitors to greater awareness or action.

Respondents made multi-layered connections with the human stories

Responses about past and present human cultures came through consistently as subjects described the purpose of the museum, things they learned or were reminded of, and the place of humans in the natural world. But in conversations about the museum themes, the main way in which respondents mentioned the "people" content was when they cited the human skulls as evidence for evolution. A couple of others mentioned changes in Utah's people as evidence for evolution and none touched on the human stories in relation to the ecology theme—a connection that museum staff might have hoped for. When visitors made references to native people or specific human-made objects (e.g. pots, beads), we could not always know if they meant *Native Voices* or *First Peoples*, making us wonder how visitors view the two exhibits or whether they are seen as connected. Respondents regularly expressed feelings of empathy or identity about *Native Voices* content; feelings expressed around the *First Peoples* exhibits were more about the fascination and romance of archeology.

"Humans' place in the natural world" was described in a variety of ways

When asked directly about evidence they saw for humans' place in the natural world, many of these subjects mentioned human-based exhibits, such as *Native Voices*, *First Peoples*, and the human skulls in *Life*. But while describing the purpose of the museum's displays, or things they were reminded of by their visit, many brought up the topic on their own. Some said the museum helped them learn about, understand, or define humans' place in nature, although they offered no details. Several remarked on the small scale of human existence, while a few went on to remark on the big impact we have, despite our "insignificance" in the bigger picture. But there were also hints that some respondents saw humans' place in the natural world ONLY in exhibits about human beings. And no respondents identified ecology as a theme of *First Peoples*. Understanding the broad range of beliefs among visitors about humans' place in the natural world could be important for the museum to achieve its mission statement.

Utah stories offered subjects a powerful link to the content

Stories of Utah came through in responses to every question, from the museum's purpose to new ideas; the Utah change theme itself ("Utah's geology, landscape, and climate have changed dramatically over 150 million years") named Utah specifically, and some people framed their comments with phrases like "the stuff about Utah." The Utah focus seemed to give them an accessible story in which to root their experiences at the museum, whether they were local residents or tourists, and also a way for them to bridge to broader natural history. As an example, while we did not purposely test the very broad "diversity" theme, it came through strongly in comments about Utah's diversity of minerals, rocks, animals, and plants. Subjects also made regular comments about their own personal experiences and memories in Utah—whether hiking, visiting reservations, studying sediments, or recalling childhood adventures—and many stated a desire to see more or do more. The museum's hope to have visitors connect the content inside the museum to what's "out there" in the state seemed to take place.

Human impact on the natural world and our responsibility to it was on some subject's minds

Although we didn't ask specifically about a message of human responsibility, some visitors expressed their interest through their comments. Throughout all the responses, particularly about the purpose of the museum and human's place in nature, up to one-third of respondents raised the issue of human impact and responsibility to the natural world—our past and our future. Several felt the museum's role was to make people "understand where they came from," and some felt that this knowledge could inform our future. Although the word "climate" itself was mentioned by 10 people altogether, only one or two raised the subject from an issue-based perspective. A couple of respondents complained they saw nothing about climate change (although there are exhibits that address it) and thought there should be a stronger conservation message and a "call to action."

The "whole museum" experience integrates the content for some people

The whole museum was cited as evidence of humans' place in nature and as evidence for the evolution theme and the Utah change theme. Most commented on the exhibit progression or specific content, and a few connected it with the building itself. Because of NHMU's architecture and the way visitors use the building (as opposed to the subject-based silos of many classical natural history museums), the museum has a unique opportunity to capitalize on these connections and amplify the interconnected storyline.

Many subjects talked about things they did or the way things are presented rather than about themes and messages

Responses like these are not unusual, as science museum visitors asked about content frequently talk about what they DID, rather than what it was ABOUT. As in the previous studies, subjects spoke regularly and positively about interactives at NHMU, and particularly the ones their children enjoyed. The presence of children in 60% of the groups in this sample doubtless shaped the results of the study. Subjects also talked frequently about the ways in which the museum uniquely contributed to learning, using phrases such as *entertain and engage, like a 3-D textbook, things not seen in books, in a hands-on way, to tell a story, make history come alive, visual images of history*, etc. This was especially true in answers about the museum's purpose, which some portrayed as being entirely to afford learning in unique ways.

A small, somewhat specialized group of subjects expressed awareness of the museum's research mission

Including the 13 respondents who selected the research theme to discuss, about 20% of the EIS sample (19 of 93) recognized the efforts of the museum to explore, prepare, study, and preserve the natural history of Utah. This research-aware group resembled the overall EIS sample in being three-quarters repeat visitors, and diverged from the overall sample in having slightly more adult-only groups. In addition, about twice as many research-aware subjects as general subjects expressed a special interest in natural history: About one-third of them were professionals, including geologists, zoo or museum employees, doctors, or teachers; a few more were students in related subjects. (See page 20 for a discussion of special interests in the overall sample.) This profile suggests that those with some prior understanding of research subjects and processes may be more likely to recognize and recall the research stories presented in the exhibits.

Orientation is still an issue

Responses gathered in this study revealed that while a few visitors stumbled when recalling which floor they were on for a certain subject, few indicated they were truly lost, but rather that they were just proceeding on the museum's journey and uncertain about where they were at any one time. However, two specific complaints came from people who weren't sure where they were headed after starting at the bottom or the top, or who regretted starting wherever they had started.

In looking back over the results, we want to conclude with the following *gallery impressions* as gleaned through EIS respondents' thoughts and comments:

SKY. Few respondents mentioned *Sky*, but three or four saw the deck view and climate change area as anchors for their experience of humans' place in nature, particularly because of the air pollution.

NATIVE VOICES. Several were struck with the details and overview of the Native American story since European arrival, expressing empathy and identity.

LIFE. Subjects cited this gallery most frequently as representing humans' place in nature, and many also connected it with the ecology and evolution themes. Interactives in *Life* were often named; families continue to love this area!

LAND. Subjects overwhelmingly saw this gallery as illustrating change in Utah. While a few mentioned a "climate area," it was not clear whether they were thinking of the climate exhibits here or in *Sky*. If it was here, did they see a distinction between long term climate change and the immediate climate crisis?

GEMS. This exhibit popped up infrequently, but most often in New Ideas, regarding mineral diversity.

FIRST PEOPLES. Archeology was popular with some subjects and mentioned regularly, occasionally with specific items (moccasins, shells, pots, etc.). In contrast to *Native Voices*, no comments expressed empathy in regards to the people represented in *First Peoples*. But there were subjects who mused on archeology, one recalling collecting pot shards in Utah where they grew up, another having a fantasy of finding an untouched site to explore. Some also referred to changes in Utah's people in connection with the evolution theme.

GREAT SALT LAKE. This area was connected most often with the dramatic change theme, and Great Salt Lake or Lake Bonneville came up several times in relation to humans' place in nature. One subject named the bird migration story as evidence for the ecology theme.

PAST WORLDS. Exhibits in *Past Worlds* were connected most often with Utah change and with research; the Paleo Lab was a significant factor in the research theme, although others mentioned the Cleveland-Lloyd story. Many remarked on Utah's dinosaur diversity. Regarding humans' place in nature, this whole area evoked perspectives on the small scale of human existence in comparison to these huge animals and long time periods.

OUR BACKYARD. No subject mentioned this area. How could it be more strongly tied in to the themes?

UTAH FUTURES. This area was cited several times as evidence for humans' place in nature; one person thought it was the ONLY place in the museum that touched on humans' place. Another subject cited it as evidence for the ecology theme, describing it as being about sustainability.

3.3 RECOMMENDATIONS

Specific recommendations were made in every section of this report where we reviewed the results for each question. General recommendations are presented below, starting with conceptual and physical orientation issues:

- Provide clear and obvious physical orientation both before and after visitors arrive at the ticket taker—in the foyer, in the brochure, and on *Canyon* signage. Explain the experience so visitors can choose for themselves whether they want to begin on the top with *Sky* and *Native Voices* or on the bottom with *Past Worlds*. This would allow people (for example, older people or people with children) to decide for themselves where they want to spend their time and energy.
- Present the proposed Big Idea (or something similar) in the foyer, on the map, and elsewhere (near the Collections Wall?) to help orient visitors to the museum content and experience. Build on the power of the “whole museum” experience to communicate the interconnected threads of the museum’s natural history story.
- Rewrite and redesign the map brochure to support the themes and mission: Revise the exhibit overview paragraphs to reveal the story told by the suite of galleries. Use a spiral or bubble plan style image (see Figure 3) to stress the continual connection of the gallery content and experiences. Use these techniques to improve the directional signage and integrate it with your messages.

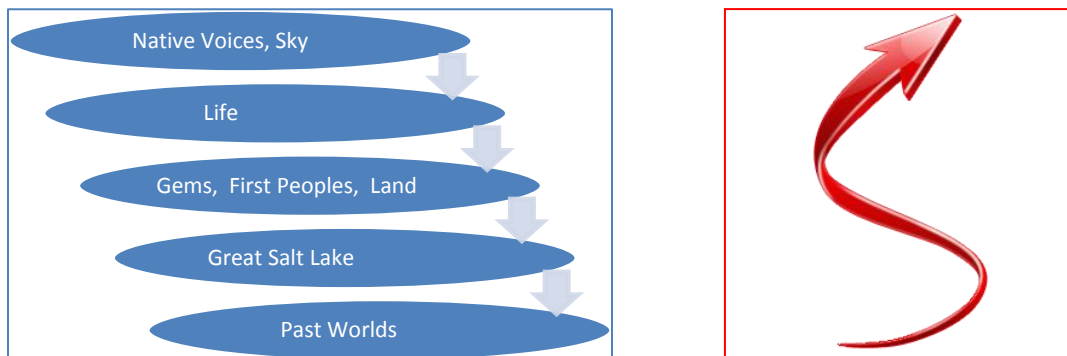


Figure 3. A couple of possible approaches for portraying the integrated museum content on the map or directional signage.

- Consider that a majority of visitors are leaving (and perhaps entering?) the museum with a story about history and change. Try to use this theme to help bring out aspects of other messages, such as evolution, human adaptation through time, and even the understanding of humans’ place in nature and our responsibility to Earth’s future.
- Consider ways to integrate the human stories (both living and prehistoric) more clearly into the overall natural history themes; increase the visibility of the message that humans are closely integrated and adapted to the natural world through past and present, by making it overt in introductory panels, brochures, or elsewhere.

- Since the interactives continue to be a huge draw for AO and AK audiences alike, continue to update and produce new ones in order to keep the museum experience fresh.
- When developing new experiences, both temporary and permanent, develop exhibit designs and interactives that are as integrated and resonant with themes and intended content as possible; while “learning” is not always overt or reported, well-designed experiences can still go a ways to carrying the messages. Define learning objectives clearly and use formative testing to improve the chances of success. Remember that in addition to their minds, visitors also bring their feelings and memories to a museum; facts and details often come to life in the affective context.
- Build your database of both demographics and exhibit effectiveness that will help you adapt, modify, and improve the exhibit experience to serve visitors far into the future.

“It makes you feel that we’re just an actor on a really big stage and our part is really small. Puts things in a different perspective when you realize how old the world is. We’re not the first or the last act.”

3.4 NEXT STEPS

This series of whole museum studies has revealed something about what visitors to the NHMU are doing, seeing, and thinking about as they move throughout the exhibit galleries. In addition, the staff has gained a sense of the possibilities of visitor evaluation to inform the museum's development and have begun to attain a comfort level with integrating visitor evaluation into all exhibit development processes.

Some of the next steps described in previous reports are still recommended:

- Summative evaluations should be done on every new show in the Special Exhibits Gallery to gauge the effectiveness of this area and its relationship to the rest of the museum, as well as to continue to build an awareness of the language visitors use when talking about the content presented by the museum.
- We strongly suggest that the museum sample the demographics of its visitors on a regular basis, e.g., four times a year, to get a true understanding of the seasonal and annual trends or significant changes in visitor numbers and characteristics. Data that will add to samples already made for WMTS, STS, and EIS include: visit status (first-time at new building/repeat); membership status; zip code; group make-up (adults only/adults with kids) and group size (# adults/# kids). Additional data could include University affiliation, special interest in natural history, or motivation for coming to the museum
- Reaching out and marketing membership towards adult-only visitors was identified as an opportunity for growth in the WMTS, and this is still true today.

In addition, armed with an understanding of how visitors are seeing, using, and experiencing the whole Natural History Museum of Utah, the museum should now move on to smaller-scale, more focused evaluation studies as they work to build and maintain their audiences. This EIS report provides the seeds to do that. It raises some questions and issues that can be further explored through focused observations and conversations with visitors about certain areas, exhibits, or activities of interest.

Some specific investigations suggested by this report might include:

- *First Peoples*. Interview visitors leaving *First Peoples*, asking them what they found to be the purpose and themes. How do they relate this area to *Native Voices*, if at all?
- Human evolution wall. What do visitors see as the purpose and themes? What does it tell them about their place in nature?
- Collections wall in the *Canyon*. Interview people after they view it. We know from previous studies that many visitors stop at it, and at least one staff member sees it as the key to the whole museum. What do people take away from it? Is it possible to amplify one or more of the overall themes at this case?

The evaluators are happy to help launch (and lunch) museum staff fully into their own evaluation process, and to provide consulting, insights, or advice when the museum finds it valuable.

3.5 THANKS

The evaluators would like to thank the Natural History Museum of Utah for the fantastic opportunity to observe and assess the “whole museum” visitor experience. Your new museum takes a leap forward in integrating experiences, memories, and content in a stunning and holistic way. We look forward to the museum’s next steps and iterations.

We especially want to thank the many people who made this study possible: Sarah B. George, Executive Director at NHMU; Becky Menlove, Associate Director for Visitor Experience; Lisa Thompson, Exhibit Developer (extraordinaire); and also Tim Lee, Duncan Metcalfe, Jim Breitingner, and the Visitor Services staff. We’d like to thank the data collectors—Kathy Burke, Carol Lemon, and Kari Ross Nelson; and editor Nancy Goodman. And, last but not least, all of the visitors who gave their time and energy to answer questions and participate in the study.

3.6 REFERENCES

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3.7 APPENDICES

Available upon request to NHMU:

1. Master Excel Spreadsheet for Cued Questionnaire
2. Master Excel Spreadsheet for Exit Interviews
3. Detailed Protocols for Data Collection and Analysis
4. Cued Questionnaire Form
5. Exit Interview Form
6. Staff Evidence for Themes
7. Staff Responses to Cued Questionnaire
8. Additional comments: Did the museum achieve its mission?