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A Note from the Editor

This issue of the *Journal* continues to represent the wide diversity of what interpretation means, is, and does. As always, there is much to be learned from each submission in helping promote and grow the discipline of interpretation. Through these submissions, may the tribe be stronger.

I look forward to the future developments of our field through your quality submissions to *JIR*.

On a Sad Note
We are strong as a discipline because of the diversity of opinion, approach, and style. There is no text book presentation or presenter. There is no right way to practice the art or science of interpretation. That inherent variability of what we do and where we do it is what excites and often frustrates us. But regardless of your approach, your training, your agency, the field of interpretation today is missing someone.

There have been few in the field that surpassed the bounds of where they worked and what they did. There are few whose words will resonate long after their voice can be heard. The tribe will miss you David Larsen—trainer, supervisor, friend, colleague, interpreter.

—C
Tribute: David L. Larsen

David L. Larsen, champion of interpretation and education for many years in the National Park Service (NPS), passed away of a heart attack at his home early on the morning of Monday, January 17, 2011.

This tragic loss for his wife Susan and their family is being felt likewise by his countless friends and peers inside and outside the service, as evidenced by the hundreds of posts on-line, emails, phone calls, and other gestures and testimonials that have poured in since the word was first shared.

David’s life passion was facilitating better visitor and public engagement with the meanings of the resources and associated stories that we preserve and protect within the NPS. He understood that we alone cannot preserve these resources and what they represent without enlisting the support of tens of thousands of individuals who, with our skillful assistance, might discover a personal link to a resource or a story and decide to help protect it themselves as well. David contributed to his profession in profound and far-reaching ways as few others have. His legacy is an enlightened interpretive workforce, committed with passion and enthusiasm to interpretation and education. His contributions to the principles and practice of interpretation and its highest ideals are an example of how one person’s energy can make such a far-reaching difference.

Upon hearing of David’s passing, Director Jon Jarvis penned a remembrance of him that we are honored to include below:

A few years ago, the National Leadership Council (NLC) met in Olympic National Park for three days at the Olympic Park Institute (OPI) Rosemary...
facility. The meeting was full of distraction because Fran Minella was leaving and there was much speculation about who would be next director. Fran decided not to attend at the last minute. The focus of the meeting was on the new direction for Interpretation and Education. We had a panel planned with our partners from OPI, the North Cascades Institute and the Golden Gate Conservancy.

But David Larsen, Sheri Forbes, and I were struggling to figure out how to launch the discussion, how to really engage the NLC in a meaningful way. I cannot remember which of us suggested it, but we convinced David to just do one of his signature interpretive programs from his time as an interpreter at Harpers Ferry. He was nervous. This was the NLC, not the public. We were 3,000 miles from Harpers Ferry. Where was the PowerPoint? The NLC came back from break and with only a very brief intro, David launched into his story of John Brown, the Civil War, and the forgotten people from 150 years ago. In characteristic David style, he charged back and forth across the room, bellowed and whispered and transported us all back to the banks of the Shenandoah and Potomac Rivers. No one was looking at their blackberry. No one got up to get coffee. He had the NLC in the palm of his large hand. David was the Tilden of our time, an inspiration to us all, an embodiment of the power of interpretation. His passion infected us all and lives on in every walk, talk and program carried out at campfires, trails, visitor centers and classrooms across the nation. —Jon

For the past seven years, David served as the training manager for interpretation and education at the center. He spent 13 years as a frontline interpreter at Harpers Ferry National Historical Park, the Vietnam Veterans Memorial, and the Washington Monument. He also taught environmental education for two years at Hard Bargain Farm in Accokeek, Maryland. David worked for the Library of Congress, the National Archives, and for History Associates, Inc. For five years, David was the interpretive historian for the National Capital Region Support Office.

David traveled all over the country conducting interpretive training, field evaluations, and interpretive planning. Since 1995, he was a leader and champion for the creation of professional interpretive standards through a national curriculum, peer review certification program, and coaching network implemented through the National Park Service’s Interpretive Development Program. David worked extensively with the U.S. Fish and Wildlife Service on similar standards, as well as with the National Association for Interpretation.

In recent years David reached new heights in his leadership role. As the cochair of the National Education Council, he helped author the Interpretation and Education Renaissance Plan, providing a blueprint for reinvigorating the profession and its impact to achieve the NPS mission. He engaged in intensive leadership training through Harvard’s John F. Kennedy School of Government Executive Education. He coordinated interpretive planning for the new Flight 93 National Memorial. And he played an important role supporting the National Park Service’s Second Century Commission, helping to craft the vision and direction for the service for generations to come.

David wrote and directed the training video An Interpretive Dialogue and edited Meaningful Interpretation—a publication on interpretive philosophy and best practices.
His significant accolades included the Regional Freeman Tilden award for the National Capital Region, the National Park Service Sequoia Award (the highest honorary award for excellence in interpretation), and a Crystal Owl Team Award for excellence in training and development. David’s enthusiasm, dedication, passion, and innovation will continue to provide inspiration to thousands of interpreters around the globe.

—Stephen T. Mather Training Center Staff
Harpers Ferry, West Virginia
RESEARCH
Evaluation of a Third-Generation Zoo Exhibit in Relation to Visitor Behavior and Interpretation Use

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Abstract
This study, conducted over a four-year period at Chester Zoo in the UK, sought to evaluate the impact on visitor behavior and interpretation use that a transition from second- to third-generation zoo exhibit might affect. Visitors spent more time in the newer exhibit (even when allowing for relative floor area) and visitor time budgets suggest a high degree of visitor interaction with different exhibit elements. Specific interpretive elements were analyzed in detail, using quasi-quantitative methods in addition to more standard timing and tracking measures. From this, a proportional relationship between time and visitor engagement is proposed. Areas that were highlighted as under-performing during evaluation were retrofitted with simple, but highly visible, instructional signage and this was found to increase the proportion of visitors that stopped, and how long they stopped in a significant way.

Introduction
Zoo exhibits have gone through a dramatic evolution over the last 100 years. This change has often been described in terms of the transition from first- to third-
generation exhibits (Campbell, 1984). First-generation exhibits housing, often, solitary animals were bare, featureless and either barred completely or utilized deep pits as animal containment. Second-generation exhibits (of which many remain) can still be fairly austere, with modest attempts at including “cage” furniture. They are typically constructed of inorganic materials such as concrete and often surrounded by a water-filled moat. They are designed, at least in part, with the welfare of the animal in mind. In third-generation exhibits, animals are kept in species-appropriate group numbers and are planted and themed to resemble the native ecosystem of the species. The barriers between visitors and animals are normally concealed. Often, the term immersive or immersion is used to describe third-generation exhibits. By adopting this approach, the mood of the exhibit can contribute subliminally towards public education and when supported by a number of interpretive elements including signs, sensory experiences, and interactives, the exhibit message can be further consolidated (Coe, 1987).

The idea that zoos should promote conservation education is not new. Most zoos in the UK have had formal education programs for schoolchildren since the 1970s or ’80s (Woollard, 1998). In more recent times education for all of the zoo-going public has become an increasing priority. In the UK, in line with other European Union member countries, zoos now have a legal obligation to actively promote conservation education “by providing information about the species exhibited and their natural habitats” (DEFRA, 2004). The World Association of Zoos and Aquariums (WAZA) refers to conservation education as having a “central role for all zoos and aquariums” and forming a “critical component of field conservation, building awareness and support” (WAZA, 2005, p. 35). Tribe and Booth (2003) also favor zoo education for all of the visiting public, stating that because zoos attract around 600 million visitors, they have a great opportunity to engage in public education. Brewer (2001) provides support for the value of conservation education as a whole by describing it as “the practical nuts and bolts of connecting teaching with learning to cultivate conservation literacy” (p. 1203). However, in recent years there has been a call for more research to be conducted into the effectiveness of conservation education within zoos (Balmford, Leader-Williams, Mace, Manica, Walter, West, & Zimmerman, 2007; RSPCA, 2006). In addition, WAZA (2005) also recognizes the key importance of the evaluation of education programmes.

Traditional educational interventions such as teaching schoolchildren are routinely evaluated in many zoos. Exhibits are part of the educational landscape of zoos, particularly if they are third-generation and contain interpretive elements. Their effectiveness as public education conduits should also be evaluated. This may provide valuable information to drive remedial work or retrofitting, provided that during the planning phase, clearly defined exhibit aims are identified. See Sickler, Fraser, Gruber, Boyle, Webler, and Reiss, 2006, or Hayward and Rothenberg, 2004, for examples of comprehensive evaluations of exhibits, including pilot phases similar to this study.

**Summary of Exhibit and Interpretation Evaluation**

Zoo exhibit studies have often mirrored the techniques pioneered in museum studies. These include the collection of data relating to visitor behavior and the variables that may determine it (Ross & Gillespie, 2009; Zwinkels, Oudegeest, & Laterveer, 2009; Moss, Francis, & Esson, 2008; Nakamichi, 2007; Ross & Lukas, 2005; Johnston, 1998; Philpott, 1996; Bitgood, Patterson, & Benefield, 1988; Marcellini & Jenssen, 1988; Derwin & Piper, 1988). The most common method used can be described in general terms as “visitor
tracking” or “behavior mapping.” This involves the unobtrusive observation of visitors and recording how they behave in exhibits. Yalowitz and Bronnenkant (2009) provide an overview of this approach. Typically data, such as the number of stops at animal viewing windows or interpretive elements, are collected together with the viewing time for each and overall dwell time for the exhibit as a whole. Bitgood, Patterson, and Benefield (1986) give an overview of ten variables that can affect visitor behavior in zoo exhibits. Such studies allow a detailed picture of exhibit usage to be revealed. However, from an educational perspective, we cannot deduce that learning has taken place on the basis of a visitor stopping at an animal viewing window or apparently attending to an interpretive sign.

There is a growing number of researchers involved in the evaluation of interpretation (as opposed to the evaluation of whole exhibits) and studies are commonly undertaken at heritage sites, national parks, museums, and science centers (Yamada & Knapp, 2010; Hughes, Ham, & Brown, 2009; Weiler & Smith, 2009; Ballantyne, Packer, & Hughes, 2008). Much of this work concentrates on the impact of interpretation on visitors—this could mean uncovering what visitors might have learned from interpretation, or how their behavior or actions might have changed because of its influence. For example, Kim, Airey, and Szivas (2010) used a survey instrument to assess attitudes and environmental intentions of visitors to a coastal area in the UK and found that interpretation had some positive, site-specific impact but was not as effective on influencing longer-term or broader conservation issues. Tubb (2003) reported similar results, finding that visitors to a UK national park generally showed only site-specific attitude changes when exposed to interpretation. Barriault and Pearson (2010) present a “Visitor Engagement Framework”—a system that allows observations of visitors to be assigned to one or more hierarchical, behavior categories.

Interpretation research undertaken in zoo settings is becoming more common (Fraser, Bicknell, Sickler, & Taylor, 2009; Fuhrman & Ladewig, 2008; Povey & Rios, 2002; Broad & Weiler, 1998; Woods, 1998) and there have been some highly innovative and diverse studies. For example Fraser et al. (2009) provide an insight into what zoo visitors want to read on species signs—namely factual information: conservation status, where animals live, any unusual adaptations or behaviors. In a similar vein, Fuhrman and Ladewig (2009) reviewed the characteristics of species utilized by zoos in interpretation. Broad and Weiler (1998) present a detailed content and visitor analysis of two tiger exhibits and suggest a link between interpretive content and the learning that took place.

Post-occupancy Studies in Zoos

There have been a limited number of other post-occupancy exhibit studies (those conducted after the completion of new exhibits) undertaken in other zoos. For example, Shettel-Neuber (1988) used four methods (including visitor tracking and questionnaires) to assess two second-generation (older style) and two third-generation (modern, immersive) exhibits that housed the same species. The attitudinal preference of visitors was for the modern exhibits, but the conclusions from the visitor behavior data were not as obvious. Derwin and Piper (1988) used a mix of unobtrusive observation correlated with visitor recall of information, finding a strong correlation between dwell time and exhibit elements explored. Wilson, Kelling, Poline, Bloomsmith, and Maple (2003) conducted interviews with visitors with regard to a new giant panda exhibit, finding that visitors felt positively towards many aspects of the new exhibit, with particular reference to the educational opportunities this exhibit offered.
Rationale for This Work

In this paper, we provide a detailed analysis of a replacement immersive, third-generation orangutan exhibit at Chester Zoo, UK, using primarily quantitative methods. Visitor exhibit use was observed in the second-generation exhibit and compared with that in the newly built one and new, prototype interpretation was pre-tested with zoo visitors. Quantitative methods were selected for their ease of use and speed of data analysis, allowing for rapid feedback during the design process and in the immediate post-occupancy period. However, it is recognized that a mixed-methods approach could have provided a more powerful overall assessment, particularly when considering the educational impact of the exhibit.

The main motivation for this research was to utilize an evidence-based approach to improve interpretation use and performance, but also to provide a better overall exhibit experience for visitors, with interpretation being a key part of this.

Methods

Chester Zoo

Chester Zoo is one of the leading zoos in the world (Forbes, 2007) and is the most visited in the UK (attracting around 1.4 million visitors each year). It is situated in the northwest of England and is within a 90-minutes drive of some of the most populated areas of the UK, including Manchester, Liverpool, Birmingham, and Leeds. Chester Zoo covers an area of approximately 50 hectares and is home to around 400 different species.

The Old Exhibit

Before the construction of the Realm of the Red Ape (RORA) exhibit began, evaluation was conducted in the Orangutan Breeding Centre (OBC), which was built in 1969 and was very much a second-generation exhibit, more functional than aesthetic. Visitor behavior was recorded in this exhibit using visitor tracking methods (see below for specific details) and overall dwell time and visitor stops were recorded. The aim was to compare visitor use of orangutan exhibit elements in the old and new exhibit (controlling for variables). Two hundred groups were recorded. This data was collected during between October 2004 and March 2005.

The New Exhibit

The study took place between 2007 and 2008 in the RORA exhibit at Chester Zoo and the data was collected by experienced visitor researchers from Chester Zoo’s Education Division. RORA was opened in June 2007 after a two-year construction and replaced the second-generation exhibit, OBC.

RORA sought to recreate a southeast Asian tropical forest canopy in an indoor exhibit and the design theme was “Life in the Canopy.” Visitors entered the exhibit at canopy level via a raised walkway (as they had in OBC) and then made their way around a climate-controlled linear walkway, themed with authentic tropical plants, including orchids and pitcher plants. Water was sprayed into the exhibit with misting machines, for the plants’ benefit and to add to the immersive experience. The orangutans (Bornean, Pongo pygmaeus and Sumatran, Pongo abelii) were found in a number of viewing windows along the walkway—some with an outside aspect, some with viewing to the inside enclosures. A family of lar gibbons (Hylobates lar) shared the enclosures with the orangutans forming a mixed-species exhibit.
The walkway experience included smaller enclosures housing canopy species that share the same distribution as orangutans, such as Salvador’s monitor (*Varanus salvadorii*), reticulated python (*Python reticulates*), and dead leaf praying mantids (*Deroplatys desiccata*). The planting, atmosphere, and variety of canopy species all contributed to the third-generation immersive exhibit experience.

Orangutan interpretation was principally in the form of 13 x 2 meter-high panels with high-impact photography; text was based around the educational theme of “Kinship” making connections that emphasized the relatedness between humans and orangutans in order to evoke an emotional response in visitors. The interpretive scheme included some traditional read-only signage, primarily for the other canopy species and the installation of interactive elements; a “virtual storm” where a back-lit panel displayed the changing moods and weather of a rainforest, complete with sounds; a large “drip-tip” leaf model for children to shelter under (with a photographic panel that showed comparative behavior in a young orangutan) as a photo opportunity, and a model orangutan nest for children to sit in (accompanied by a photographic comparison), again as a photo opportunity. Two computer-driven interactive comparison games were included, using the same large panels, but with touch-pad controls and monitors.

**Pre-evaluation of Interpretive Concepts for RORA**

As this was a multi-million pound exhibit, it was seen as important to test the prior knowledge and understanding of the proposed design theme “Life in the Canopy,” the educational theme “Kinship,” and the proposed branding of the exhibit “Realm of the Red Ape.” This was done in two ways.

First, 74 zoo visitors were randomly stopped and asked three questions:

- Which part of a forest is the canopy?
- What do you understand by the word kinship?
- If one of the zoo’s exhibits was called “Realm of the Red Ape,” what animal would you expect to find there?

The second approach involved the design of prototype orangutan interpretive elements to explore visitor understanding further, testing the education theme in each panel. Random groups of zoo visitors were brought together to view an audio-visual presentation of the panels. They were asked to rate each prototype theme on how closely related each one made them feel towards orangutans. Visitor preferences and feedback were recorded using software designed to assess educational performance, and utilized handheld voting pads (CPS™); this allowed data to be recorded automatically but also meant that participants were less influenced by one another’s responses. Participants ranked their responses to questions on a five-point Likert scale, namely: Very closely related, Quite closely related, Related, Quite distantly related, Very distantly related. A total of 183 visitors participated.

**Evaluation of RORA**

The main body of the study focused on the evaluation of the completed exhibit. This involved a visitor tracking method based on that provided by Serrell (1998). Visitor groups were randomly selected for tracking as they entered the main exhibit (i.e. not on the raised walkway to the entrance). When one member of that group made a definitive
movement towards an exhibit element (animal viewing or interpretation), they became the group’s representative and the sole target of tracking for the rest of that particular group’s visit. Using a plan of the exhibit, the researcher (who was dressed in plain clothes and not identifiable as member of zoo staff) recorded the behavior of the tracking target. This required the researcher to record each stop at an exhibit element in addition to the time spent at the element in question. Overall dwell time for the stay in the exhibit was also recorded. This data allowed the calculation of the percentage of visitor groups that stopped at each particular element (attracting power) and how long they were attentive (holding or viewing time). This allowed accurate “time budgets” for the 151 visitor groups that were tracked to be constructed.

Additional methods were employed to assess the degree to which visitors were engaging with some of the computer-driven interactive games. After extensive prior observations of visitor interaction with the games, a four-level visitor engagement scale was developed (similar in concept to the framework described by Barriault and Pearson, 2010):

Level 1: Glances at the element, or presses button but does not stop.

Level 2: Stops at element, but either does not interact or fails to reach question stage. This behavior is often characterized by misuse of an interactive, such as repeated pressing of button without purpose.

Level 3: Reaches question stage of the game but may not answer all the questions. Visitors interact and may discuss the questions (perhaps incorrectly) but less enthusiastically than at level 4.

Level 4: Visitor reaches question stage and completes the majority of questions and may repeat the question cycle. This behavior is often characterized by enthusiasm and/or animated visitor conversation.

Statistical Analyses
Data was collected for a number of variables, including nominal and scale measures. Also, some scale data did not fit a normal distribution therefore, in those cases, averages were reported as median figures and non-parametric methods of inferential statistics were used, such as the Mann-Whitney test for independent samples. Nominal data was subject to chi-square tests of independence where appropriate.

Results

Pre-evaluation and Testing of Exhibit Themes
As explained above, three questions were asked to a number of visitor groups. Table 1 displays the outcome of this survey. Clearly, visitors were comfortable with the idea of “kinship,” with almost 90 percent of respondents giving an acceptable answer. As a consequence, this education theme was adopted for the exhibit. However, visitors were less confident in their understanding of the terms “canopy” and “red ape.” As a result of this finding the word “canopy” was substituted by the words “tree tops” and the exhibit design theme was re-named as “Life in the Treetops.” An image of an orangutan was incorporated into the branding of the exhibit whenever Realm of the Red Ape was used, to provide a visual prompt.

As expected, visitor groups involved in the testing of the prototype panels that
Table 1. Pre-testing of visitor knowledge with regard to interpretive concepts and exhibits ideas for RORA. N=74.

<table>
<thead>
<tr>
<th>Question and accepted answers</th>
<th>% acceptable response</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do you understand by the word kinship? <em>(accepted answers = family, friends, friendship, relative, clan, tribe)</em></td>
<td>87.8</td>
</tr>
<tr>
<td>Which part of a forest is the canopy? <em>(accepted answers = highest layer of foliage, high up, in the trees)</em></td>
<td>60.8</td>
</tr>
<tr>
<td>If one of the Zoo’s exhibits was called ‘Realm of the Red Ape’, what animal would you expect to find there? <em>(accepted answers = orangutan)</em></td>
<td>54.1</td>
</tr>
</tbody>
</table>

Table 2. Five-point Likert responses to prototype panels. All respondents were asked to rate according to how closely related to Orangutans each of the prototypes made them feel. N=183.

<table>
<thead>
<tr>
<th>Interpretation Prototype</th>
<th>Kinship rating</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Same Deep Down</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(brain folds)</td>
<td></td>
<td>3.59</td>
<td>.99</td>
</tr>
<tr>
<td>The Same Deep Down</td>
<td></td>
<td>3.59</td>
<td>.87</td>
</tr>
<tr>
<td>(brain size)</td>
<td></td>
<td>3.61</td>
<td>.98</td>
</tr>
<tr>
<td>The Same Deep Down</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(chromosomes)</td>
<td></td>
<td>3.65</td>
<td>1.16</td>
</tr>
<tr>
<td>Indigestion!</td>
<td></td>
<td>3.82</td>
<td>1.06</td>
</tr>
<tr>
<td>Bedtime</td>
<td></td>
<td>4.04</td>
<td>.90</td>
</tr>
<tr>
<td>Handyman Hints</td>
<td></td>
<td>4.13</td>
<td>1.01</td>
</tr>
<tr>
<td>Growing up takes longer</td>
<td></td>
<td>4.19</td>
<td>1.01</td>
</tr>
<tr>
<td>Staying Dry...</td>
<td></td>
<td>4.25</td>
<td>.91</td>
</tr>
<tr>
<td>Mirror Image</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Five-point Likert responses to prototype panels. All respondents were asked to rate according to how closely related to Orangutans each of the prototypes made them feel. N=183.
explored “Kinship” felt particularly strongly towards content that had a human interest (see Table 2). For example, the panels “Mirror Image” (explaining how, like humans, orangutans can recognize their reflection in a mirror) and “Growing Up Takes Longer” (showing how similar child-rearing behaviors are in human and orangutan mothers) were given high “relatedness” ratings by the visitors. Other, more scientifically-based panels were scored less favorably. For example the “Same Deep Down” panel (looking at the biological similarities—DNA, large brain size, etc.—between humans and orangutans) did not invoke the same feelings of kinship in visitors. In response, the scientific content of this particular panel was toned down, while another poor-scoring panel that investigated the digestive systems of humans and orangutans was dropped altogether.

**Comparisons Between RORA and the OBC**

The obvious comparison between the two exhibits is how long visitors spent in each exhibit (Table 3). From this it is clear that RORA held visitors for a longer period than OBC. This equates to a median dwell time of 583 seconds in RORA (10 minutes, 43 seconds) in comparison with a median dwell time of 188 seconds in OBC (4 minutes, 8 seconds). There was a significant difference in overall dwell time between the two exhibits \( U=1240, z=-14.726, p<.001 \).

However, this is not necessarily a fair comparison as the visitor floor area of both exhibits differs greatly (122m\(^2\) for the OBC, 336m\(^2\) for RORA). When we control for visitor floor area (Table 3), we find that the two exhibits are more similar in visitor use than first thought (1.74 seconds/m\(^2\) for RORA and 1.54 seconds/m\(^2\) for the OBC) although still significantly different \( U=12278, z=-2.998, p=.003 \).

**Quantitative Evaluation of Visitor Behavior in RORA**

The collection of holding time data for all visitor stops allows for a more complete analysis of behavior. Figure 1 shows the breakdown of this into the four main categories of stop. Clearly, animal viewing took up the majority of visitor time in the exhibit (187 seconds for flagship species—orangutans, 93 seconds for the other species). Visitors spent more time viewing the orangutans when compared to the other species. Overall, time spent interacting with interpretation was much less. Visitors spent, on average, over...
Figure 1. Time budget for the average (median) visitor to RORA exhibit. Flagship species = 32% (187 seconds); Other species = 16% (93 seconds); Non-interactive interpretation = 0% (1 seconds); Interactive interpretation = 2% (12 seconds); Passive time = 50%. Overall active time = 50%.

Figure 2. Comparison of interactive interpretation use (attracting power and holding time) before retrofitting work. Interactives are listed from left to right as visitors would approach them through the exhibit. For example the “Map” interactive is the first to be encountered; “Growing up takes longer” is the last.
Photographs 1 and 2. “Virtual Storm” interactive plus close-up of the simple laminated sign that was added post-build.

Photographs 3 and 4. “Leaf Model” interactive plus close-up of the simple laminated sign that was added post-build.
twice the amount of time using interactive interpretation compared to read-only signs. The remainder of the time (50 percent, 290 seconds) was spent passively (that is, walking through the exhibit, standing, waiting for others, etc.).

**Interactive Interpretation Use and Retrofitting**

Figure 2 shows the relative attracting power and holding times for the interactive interpretation in RORA. From this we found that two pieces were not as appealing to visitors as we would have hoped (when compared to the usage of the other interactives): the “Virtual Storm” and the “Leaf model.” As a result of this data, some simple retrofitting was conducted on these elements. This involved the fitting of brightly colored “cue” signs, clearly advertising the interactives in question. Previously both the “Virtual Storm” and the “Leaf Model” had been either missed completely or appeared to have been misunderstood by visitors. Photographs 1 and 2 show details of this for the “Virtual Storm”; Photographs 3 and 4 show details for the “Leaf model.”

Attracting power and holding time data was then collected after the fitting of these signs. Table 4 shows the revised data after the changes were made. Here we can see that the attracting power and holding time significantly increased for both interactives.

**Specific Examples of Visitor Engagement with Interpretation**

As a further exploration into interpretation use, two examples of computer-driven interactive games were evaluated using a devised “scoring matrix” of engagement. The two examples used were:

*The Same Deep Down*

Interactive that explores the similarities between humans and orangutans. Touch pads and monitors allow visitors to pair match images. Examples of images include an x-ray of a human and an orangutan skull (see Photograph 5).
Growing Up Takes Longer
Interactive that explores similarities in child/parent relationships between humans and orangutans. Again, touch pads and monitors are used to allow visitors to compare photographs of various behaviors, touching the pad when they match a pair (see Photograph 6).

As detailed in the methods section, a four-level scale was used to rank visitor engagement; this could then be converted into a percentage figure within each of the four levels. Table 5 compiles data collected at these two interpretive elements. The mean level of engagement was fairly high (on the four-point scale) for both interactives, although when explored further we find that there was a greater proportion of visitors reaching levels 3 & 4 (63 percent) at “The Same Deep Down” when compared to “Growing Up Takes Longer” (40 percent). Few visitors who stopped remained at engagement level 1 (1 percent and 11 percent respectively), indicating a good transition from stop to interaction.

Further investigation of these revealed an interesting relationship between the engagement level and holding time (Figure 3). There appears to be a strong positive relationship between the two measures.

Discussion

Pre-testing of Visitor Understanding and Interpretation Prototyping
Using a combination of face-to-face interviews, electronic voting, and unobtrusive observations, a broad understanding of visitor prior knowledge was obtained. From this
Table 5. Levels of engagement for two pieces of interactive interpretation; “The Same Deep Down” and “Growing Up Takes Longer.” Mean holding times used as normal distribution observed. N=100 for both interactives.

<table>
<thead>
<tr>
<th></th>
<th>Mean level of engagement (1-4 scale)</th>
<th>Mean Holding time (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Same Deep Down</td>
<td>2.96</td>
<td>41.5</td>
</tr>
<tr>
<td>Growing up Take Longer</td>
<td>2.43</td>
<td>38</td>
</tr>
</tbody>
</table>

Figure 3. Relationship between the level of visitor engagement and holding time for (a): “The Same Deep Down” and (b): “Growing Up Takes Longer.”
it was quite clear that visitors had a grasp of the meaning of “Kinship” and to a lesser extent “Canopy.” The proposed branding of the exhibit “Realm of the Red Ape” was tested and there was found to be a lack of visitor understanding of the term “Red Ape.” Nearly half of those surveyed did not make the connection with orangutans. Further probing revealed that visitors did have an awareness of orangutans but did not associate the species with the term “Red Ape.” The assumption was that if a zoo exhibit was called “Realm of the Red Ape” it would contain “red apes”—a species of ape.

Prototyping revealed that participants are very much attracted to sentimental imagery. Interpretation that explored the anthropomorphic relationships between humans and orangutans promoted a more affiliative response in the visitor, particularly when compared to interpretation that explored the colder scientific basis to our similarities. These scientific educational themes clearly invoked a lesser response from the visitor groups tested. This would suggest that interpretation dealing with purely scientific topics may need to be reassessed as to how it is presented to visitors, to avoid this science-laden turn-off.

Evaluation of RORA – General Discussion
Exhibit dwell time comparison clearly tells us that visitors spend more time in RORA exhibit when compared to OBC (Table 3), whether we compare directly or when controlling for visitor floor area. What is less clear is whether this makes RORA in some way more successful as a result. By looking in more detail at what visitors are doing, for how long, and in which part of the exhibit, this method, as an evaluative tool, becomes much more useful. For example, in some exhibits it might be useful to plot attracting power and/or holding times on a floor plan of the exhibit. From this, it is possible to find “hot” or “cold” spots within the exhibit space—that is, elements that are more or less popular relative to others of the same genre.

This method also allows for the relative comparison of interpretive elements within the same space; for example, we can provide a detailed breakdown of which interpretive elements are the most attractive and which hold attention for the longest. Those that under-perform relative to others need to be assessed carefully to uncover any potential problems. For example, does an interpretive element attract visitors but fail to hold attention? If so, this would suggest that something is not quite right with the presentation of the content. Conversely, an element with a low attracting power but high holding time suggests that the element is working well but visitors are simply not seeing it. This is exactly what we uncovered with the “Virtual Storm” and “Leaf Model” interactives (Figure 2), except in these cases, both attracting power and holding times were low (in relative terms). By adding brightly colored signs that cued in visitors to wait for the storm to develop in the case of the storm and advertising the photographic opportunity for children in the case of the leaf model, the effectiveness of both pieces increased greatly. The important point here is that without this research, there would not necessarily have been any awareness of this under-performance.

Limitations of Study and Recommendations
The limitations associated with using only quantitative data to evaluate exhibits, particularly when considering the educational impact, is that time and stopping data cannot tell us what visitors are thinking. These data can therefore only ever be used as an indicator of educational impact and not as a direct measure.
It is tempting to assume that the longer a visitor engages with an exhibit element, the greater the likelihood that some sort of learning experience is taking place and conversely, the shorter the time involved, the less likely it is that a visitor will assimilate knowledge or understanding. On the other hand, there is the chance that a longer holding time simply indicates increased confusion or in the case of an interactive, a lack of understanding in how to operate. This was the purpose of the four-point “engagement” scale—to see what visitors were doing during the time spent at the computer-driven interactive games.

We found a close positive relationship between the level of engagement achieved and element holding time (Figure 3). This relationship appears to be almost directly proportional (and therefore predictable), although of course, we can only confirm this pattern in these two interactives—it would be useful to have more data. However, there are two potential weaknesses in inferring too much from this relationship. First, although the four levels of engagement were carefully determined by extensive prior visitor observations, the scoring matrix is still a subjective rating of behavior, which is more prone to error and inconsistency than more easily quantified measures. Second, there is an almost automatic implication that as holding time increases so does the level of engagement, making the comparison between the two potentially flawed. Whether this suggests that the method is inappropriate (or in need of refinement) or that there really is a relationship between time and visitor engagement is currently unresolved.

With hindsight, it would have been useful to employ a mixed-methods approach to data collection to explore visitor thoughts and feelings, using qualitative methods such as conversation analysis or the use of Personal Meaning Maps (Falk, Moussouri, & Coulson, 1998). Without doubt, the inclusion of techniques like this would add another dimension to the data collection and increase understanding of the exhibit as a whole. Quantitative methods used on their own fail to encompass the full richness and depth of experience that an immersive exhibit experience can offer. Because of the diverse range of prior knowledge and experience each visitor brings to their exhibit experience, it is logical to assume that the outcomes for individual visitors may be multiple, highly diverse, and not necessarily as initially intended by educators and exhibit planners (Rennie & Johnston, 2004).

This is not to say that exhibit themes cannot be planned. The education theme in RORA was clearly defined from the project conception as being our feelings of “Kinship” towards our close relatives, the orangutans. This theme is very much in keeping with global zoo conservation strategy (WAZA, 2005) in that it was designed to “induce a feeling of wonder and respect for the web of life and our role in it; it should engage the emotions and build on this experience to create a conservation ethic that can be carried into action” (p. 38). The quantitative methods we employed have enabled us to construct a detailed model for visitor behavior within the exhibit and, as a consequence, allow us to infer educational impact to some degree. Future work should certainly focus on a more multi-method approach to help uncover the kind of “meanings” people are taking away from the exhibit experience. This is important if zoos are to further evidence their educational influence on their visitors.

Conclusions
Visitor dwell time was increased in the RORA exhibit when compared to the exhibit it replaced, OBC. This pattern was also observed when we controlled for visitor floor area. The usefulness of the simple pre-testing of exhibit and educational themes was demonstrated. The most notable findings were that visitors understood the concept
of “Kinship” (the proposed interpretive theme) but failed to uniformly understand the link between the exhibit title “Realm of the Red Ape” and orangutans. This may have an impact on visitor way-finding and understanding of zoo exhibits if names are ambiguous. Interpretation prototyping was instrumental in the fine-tuning of interpretation that was more palatable to visitor ideas of kinship and human/non-human animal similarities.

Visitor tracking in RORA revealed patterns of behavior that aid comparative exhibit element evaluation and therefore the implementation of remedial measures. The use of stopping and time data in the evaluation of educational impact was less clear-cut, although a tentative relationship between increasing holding time and visitor engagement was proposed.

References


IN MY OPINION
Introduction

Last year I read a paper by Dr. John Lemons, Department of Environmental Studies, University of New England titled, “Revisiting the Meaning and Purpose of the ‘National Park Service Organic Act.’” I enjoyed the read and thought the subject needed further attention, and the Journal of Interpretation Research came to mind. In the opinion section of this issue of this journal are two papers that address the matrix of laws, proclamations, executive orders, regulations, and directives that national park managers must know and adhere to while they perform their work.

The three-plus decades I spent with the National Park Service (NPS) were regularly filled with reminders of the 1916 Act that lead to the creation of the National Park Service. Within the NPS, it’s simply referred to as the Organic Act. In 1978 when I attended the Ranger Academy at the Albright Training Center, the act had a dominant spot on a primary wall of the classroom for everyone to see. Within the Organic Act one will find these words: “…which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” Those words have been spoken and recited over and over again as the primary purpose of the National Park Service. If only the work were that simple.

The Organic Act is a cornerstone of the National Park Service, a large cornerstone indeed. However, the Organic Act is one of several items that compose the matrix of acts and laws and policies that govern the work of every employee within the NPS. Managing a unit of the NPS is not a struggle of one or the other: protection of the resources versus visitor enjoyment of the resources. A manager must achieve the balance of several governing elements all at once; drop one or more of those elements and the manager fails. With that failure the opportunity afforded the public to enjoy the resources of a park becomes a failure too. A failure of public trust occurs that does harm at many levels.

Park management requires balance. Here are two simple examples:

• A park management team prepares to dig a trench for a power line from the main to a historic building that has been stabilized for limited public visitation. In the pre-construction process a review of the work to be done is completed. One step is compliance of Section 106 of the National Historic Preservation Act (1966). This work may require a thorough review and possible input from the State Historic Preservation Office, too.
A park starts the development of a management plan to address a significant increase in the use of a popular form of personal recreation transportation (it may be snowmobiles or jet skis). A thorough consultation of the National Environmental Policy Act (NEPA) of 1969 would be in order. There are three levels of analysis. Each level may or may not require further action. The Categorical Exclusion may end the process. An Environmental Assessment may lead to a Finding of No Significant Impact (FONSI) and the Environmental Impact Statement (EIS) addresses consequences of a federal action. Some actions lead right to an EIS. The EIS is a public input process.

These are only two simple examples that would require a manager to go beyond the Organic Act while addressing programs or operations in a park. The opinion papers in this issue of the *Journal*, authored by Bill Wade and Jerry Rogers, address with detail the matrix of law, policy, and federal acts that drove them through their careers. Bill Wade is retired superintendent of Shenandoah National Park and Jerry Rogers is retired associate director for cultural resources, National Park Service.

Bob Valen  
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How National Park Service Operations Relate to Law and Policy

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Superintendent, Shenandoah National Park (retired)
Former Chair, Executive Council, Coalition of National Park Service Retirees

Abstract
We take for granted many of the programs and activities that have become a part of the national park experience, both for visitors and for employees. But what are the legal authorities for carrying out these park management operations? What permission do we have to protect natural or cultural resources; or to insist that visitors behave in certain ways; or to provide interpretation and education programs; or to provide and maintain facilities? In truth, the answer is a complex bundle of authorities, some of which are ambiguous and some are obscure. Fortunately, the guidance needed for carrying out most of the traditional, routine responsibilities that we’ve become accustomed to has been condensed into a relatively straight-forward set of policies and guidelines. Even so, we are seeing a disturbing trend of decisions being made at the park level that are inconsistent with law or policy.

Keywords
national parks, National Park Service Organic Act, National Park Service Management Policies

Hierarchy of Authorities
The management of the National Park System and NPS programs is guided by the Constitution, public laws, treaties, proclamations, executive orders, regulations, and directives of the Department of the Interior.

The property clause of the U.S. Constitution, which is the supreme law of the United States, gives Congress the authority to develop laws governing the management of the National Park System. The property clause specifically directs that “The Congress will have the Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States” (article IV, section 3). Under this authority, the Congress established the National Park Service in 1916 with a law often referred to as the Organic Act (US Code; TITLE 16; CHAPTER 1; SUBCHAPTER I; §
1. Many people can recite the “mission” component of this law: “…which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

Less familiar is the statement that precedes the “mission,” but which gives the service many of its authorities: “There shall also be in said service such subordinate officers, clerks, and employees as may be appropriated for by Congress. The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified, … as provided by law, by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, (which purpose is…).” [Emphasis added.]

Congress supplemented and clarified these provisions through enactment of the General Authorities Act in 1970, and again through enactment of a 1978 amendment to that act (the “Redwood amendment,” contained in a bill expanding Redwood National Park), which added the last two sentences in the following provision. The key part of that act, as amended, is as follows:

Congress declares that the National Park System, which began with establishment of Yellowstone National Park in 1872, has since grown to include superlative natural, historic, and recreation areas in every major region of the United States, its territories and island possessions; that these areas, though distinct in character, are united through their inter-related purposes and resources into one National Park System as cumulative expressions of a single national heritage; that, individually and collectively, these areas derive increased national dignity and recognition of their superlative environmental quality through their inclusion jointly with each other in one National Park System preserved and managed for the benefit and inspiration of all the people of the United States; and that it is the purpose of this Act to include all such areas in the System and to clarify the authorities applicable to the system. Congress further reaffirms, declares, and directs that the promotion and regulation of the various areas of the National Park System, as defined in section 1c of this title, shall be consistent with and founded in the purpose established by section 1 of this title [the Organic Act provision quoted above], to the common benefit of all the people of the United States. The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress. [Emphasis added.] (16 USC 1a-1)

The importance of the highlighted portions of these laws cannot be overstated, in terms of the responsibilities they place on park and program managers. In short, nothing can be done to derogate the values and purposes of the parks; nor that will affect or set precedent in other units of the system.

Moreover, the Senate committee report stated that under the Redwood amendment, “The Secretary has an absolute duty, which is not to be compromised, to
fulfill the mandate of the 1916 Act to take whatever actions and seek whatever relief as will safeguard the units of the National Park System.” This duty extends to every park and program manager in the National Park Service.

**Policies and Other Guidance**

Once laws are enacted, authority for interpreting and implementing them is delegated to appropriate levels of government. In carrying out this function, the National Park Service, like other federal agencies, develops policy to interpret the ambiguities of the law and to fill in the details left unaddressed by Congress in the statutes. NPS policy must be consistent with higher authorities and with appropriate delegations of authority.

Arguably, the NPS Management Policies document is the most important for governing what can and can’t happen in national parks. The 2006 volume of NPS Management Policies provides several descriptions of the document’s intent and its importance. The Policy document (The Directives System; page 4):

…is the highest of three levels of guidance documents in the NPS Directives System. The Directives System is designed to provide NPS management and staff with clear and continuously updated information on NPS policy and required and/or recommended actions, as well as any other information that will help them manage parks and programs effectively. [Emphasis added.]

Interim updates or amendments to the Policies may be accomplished through director’s orders (the second level of the Directives System), which also serve as a vehicle to clarify or supplement the Management Policies to meet the needs of NPS managers. Under the Directives System, the most detailed and comprehensive guidance on implementing Service-wide policy is found in “level 3” documents, which are usually in the form of handbooks or reference manuals issued by associate directors. These documents provide NPS field employees with compilations of legal references, operating policies, standards, procedures, general information, recommendations, and examples to assist them in carrying out Management Policies and director’s orders.

The Policy document (The Directives System; page 5) makes an important statement:

*This document is intended to be read in its entirety.* While certain chapters or sections provide important guidance by themselves, that guidance must be supplemented by the overriding principles listed below, which provide insight into the reading of this document. In addition there is an interrelationship among the chapters that provides for clarity and continuity for the management of the National Park System. [Emphasis added.]

The principles state that the Policies should:

- comply with current laws, regulations, and executive orders;
- prevent impairment of park resources and values;
- ensure that conservation will be predominant when there is a conflict between the protection of resources and their use;
maintain NPS responsibility for making decisions and for exercising key authorities;
emphasize consultation and cooperation with local/state/tribal/federal entities;
support pursuit of the best contemporary business practices and sustainability;
encourage consistency across the system—“one National Park System”;
reflect NPS goals and a commitment to cooperative conservation and civic engagement;
employ a tone that leaves no room for misunderstanding the Park Service’s commitment to the public’s appropriate use and enjoyment, including education and interpretation, of park resources, while preventing unacceptable impacts;
pass on to future generations natural, cultural, and physical resources that meet desired conditions better than they do today, along with improved opportunities for enjoyment.

The Policies (Section 1.4.4; page 11) further require that, “The impairment of park resources and values may not be allowed by the Service unless directly and specifically provided for by legislation or by the proclamation establishing the park. The relevant legislation or proclamation must provide explicitly (not by implication or inference) for the activity, in terms that keep the Service from having the authority to manage the activity so as to avoid the impairment.”

Moreover, (Policies, Section 1.4.7.1; page 12):

Park managers must not allow uses that would cause unacceptable impacts; they must evaluate existing or proposed uses and determine whether the associated impacts on park resources and values are acceptable. [Emphasis added.]

Virtually every form of human activity that takes place within a park has some degree of effect on park resources or values, but that does not mean the impact is unacceptable or that a particular use must be disallowed. Therefore, for the purposes of these policies, unacceptable impacts are impacts that, individually or cumulatively, would

- be inconsistent with a park’s purposes or values, or
- impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values, or
- unreasonably interfere with
  - park programs or activities, or
  - an appropriate use, or
  - the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park.
  - NPS concessioner or contractor operations or services.
The chapters of the NPS Management Policies cover all aspects of resources protection and visitor enjoyment and management:

- Park System Planning
- Land Protection
- Natural Resource Management
- Cultural Resource Management
- Wilderness Preservation and Management
- Interpretation and Education
- Use of Parks
- Park Facilities
- Commercial Visitor Services

Appendices also list 59 laws and 19 Executive Orders and Memoranda that are referenced in the Policies; and list the more than 90 Director’s Orders that offer additional guidance to decision-makers.

Perhaps the most important statement in the Policies (Compliance, Accountability and Enforceability; page 4) is: “NPS employees must follow these policies unless specifically waived or modified in writing by the Secretary, the Assistant Secretary, or the Director.” [Emphasis added.] Also (same section): “Park superintendents will be held accountable for their and their staff’s adherence to Service-wide policy.”

Why then, with all this guidance and requirement for strict compliance with the Policies do we see what seems to be an increasing number of actions by park and program managers that are inconsistent with law and policy? Recent examples include:

- Failure by management of the Intermountain Region and Yellowstone National Park to follow many applicable provisions of law and policy relative to allowing snowmobile use in Yellowstone National Park.
- An attempt by the superintendent of Little Bighorn National Battlefield to expand the visitor center in defiance of the General Management Plan for the park; simply because funds were available for the expansion under the NPS entrance/user fee allocations.
- The installation of a boardwalk and maintenance facilities affecting critical resources in Effigy Mounds National Monument without undertaking appropriate environmental and cultural compliance.
- Undertaking management and development actions at Lyndon B. Johnson National Historical Park that were not in compliance with the General Management Plan; followed by the release of an Amended GMP that attempted to justify the actions previously taken.
- Holding a Vietnam battle re-enactment at Lyndon B. Johnson NHP (not only are battlefield re-enactments prohibited by the NPS Management Policies, but this event is even more puzzling, since no Vietnam battles were fought on American soil, much less at or near this NPS unit in Texas).
Several possible answers exist:

- **Political intervention** – There is no question that some decisions are made by park managers under pressure of political influence.

- **Complexity of requirements** – Understanding all the applicable laws, policies, executive orders and other directives is a daunting situation. However, given the compilation of these requirements as part of the NPS Directives System, particularly the Management Policies, it is not difficult to conduct research into what is allowed and what is not.

- **Insufficient emphasis on law and policy** – It might be shocking to learn how many park and program managers lack appropriate familiarity with the laws governing the NPS and the NPS Management Policies; or who feel that they intuitively know “what is the right thing to do” and feel they don’t need to refer to available guidance. This is a failure of the employee and leadership development and training program of the NPS.

- **Lack of accountability** – In many circumstances where laws and policies are disregarded by park or program managers, there is no significant consequence for their omissions or negligence. Absent that, the disincentive for other managers to make decisions that don’t comply with law or policy is inconsequential.

Many of us are hopeful that the current emphasis on “principled decision-making” by NPS Director Jon Jarvis and his science advisor Gary Machlis will help avoid bad decisions affecting park resources and the experiences of visitors in the future. Jarvis and Machlis have said that decisions should be made based on:

- Accurate fidelity to law and policy.
- The best available sound science (or, we assume in those cases not involving science, the best available sound scholastic/academic research and review).
- The best interests of the broad American public.

Adherence to these decision-making principles would not only require park and program managers to pay more attention to policies and law, but would require them to pay more attention to good science (Machlis says good science is science that will stand up in court). And, it would require more attention to the statements expressed during public comment periods; perhaps reducing the tendency of some managers to discount public preferences (some saying, “Decision-making in the NPS is not subject to vote by the public”).

**Summary**

Park and program managers have all the tools needed to manage parks and programs and to carry out operations to meet the mission of the National Park Service as intended by Congress and the American people. It is their responsibility to use those tools. Constantly ringing in their ears should be the following statement:

> If we are going to succeed in preserving the greatness of the national parks, they must be held inviolate. They represent the last stands of primitive
America. If we are going to whittle away at them we should recognize, at the very beginning, that all such whittlings are cumulative, and that the end result will be mediocrity. —Newton B. Drury, Director, National Park Service, 1940–1951

References

U.S. Constitution

United States Code, Title 16 - Conservation; Chapter 1

The Anchor on a Long Chain:
The National Park Service Act of 1916
Related to Historical and Cultural Resources

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Abstract
The National Park Service Act of 1916, often dangerously considered alone, is only
one link, although a fundamental one, in a chain of authorities that acknowledge and
preserve historical and cultural resources everywhere in the United States. By fully
exercising its cultural resource leadership responsibilities and expanding them to natural
resources, the National Park Service can help to make the second century of the service
amount to a “Century of the Environment.”

Keywords
1916, Organic, mythology, mission, leadership, ecosystem

I am honored to join a multi-faceted review of the National Park Service Act of
August 25, 19161—I from the standpoint of historic and cultural resources2 and others
from natural resources management, interpretation and education, and operations
perspectives. I shall do my best, with advance warning that I long ago ceased thinking
in terms of the cultural resource component of the National Park Service mission and
have tried to think of the entire mission. Had I not made that metamorphosis during my
career I surely would have made it during 2008–09 as a member of the National Parks
Second Century Commission. This diverse body of distinguished Americans, convened
by the National Parks Conservation Association, examined the enormous changes that
have taken place during the first century of National Park Service existence, envisioned
some of the immensely greater changes that are sure to occur during the second century
that begins less than six years from now, and made recommendations for immediate
and long-range steps to enable the service to be effective in the resulting environment.
Looking far ahead and well into the service’s second century, the Commission’s Cultural
Resource and Historic Preservation Committee envisioned a “Century of the Environment” beginning August 25, 2016, in which history, nature, culture, beauty, and recreation are parts of sustainable community life and development everywhere, and in which the National Park Service preserves and interprets selected outstanding places and provides leadership to all others in similar work.  

A troublesome aspect of this assignment is a tendency of far too many to treat the 1916 Act in isolation from a more extensive body of law. We have all heard that the mission of the National Park Service is all summed up in four lines from the Organic Act:

…parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations…

Perhaps it was the complete mission briefly in the beginning, but it is not now and has not been for a very long time. From these four lines the people of the early National Park Service created an institutional mythology of a Valhalla found in some imaginary location in the back country of Yellowstone where life was pure and simple. Although subsequent laws soon expanded the mission we have clung fast to the mythology, often allowing it to lull us into a dream time that may actually harm our ability to cope with today’s realities—not to mention tomorrow’s. We need to face facts: maybe we can go to that mythological world in an afterlife, but the mission we need to deal with at work every day is so much broader as to border upon being opposite. What happens inside parks under the 1916 standard is but one part of a vastly larger whole.

Looking backward, 1916 seems a very long time ago—more than four-tenths of the chronological way back to the founding of the republic. The population of the United States and the world were approximately one-third of what they are now. Few people thought on a global scale, except in terms of dividing most of it up for domination by a few major powers, although there was a new horror in the form of a genuinely “world” war caused by collision of such competing empires. Few American households had telephones, none had radio or television, and most did not receive newspapers. The United States was in transition from rural to urban, from animal-drawn transportation to mechanized, and Henry Ford’s now antiquated Model T was not yet halfway through its 19-year production run. My own mother in that year rode horseback or walked a dusty two miles to read, cipher, and recite in a one-room country schoolhouse. One President of the United States now dead and five who survive were yet to be born. The National Park Idea was more than four decades old, and there were 37 units in what needed to become a “system,” but the notion of a “service” to run them was new and controversial. The new bureau and the older Forest Service had instantly begun to view one another more as rivals than allies, and national park managers quite naturally perceived the Organic Act as directing their attention inside their parks rather than beyond boundaries.

Stephen Mather, the founding director of the service, very soon began to promote state parks as interim stops on the highways that he also promoted as part of his strategy...
to build a user constituency for the national parks. This action alone recognized a greater mission beyond park boundaries and beyond the four revered lines of the 1916 Act. He also embraced an outside organization, the National Parks Association. Already the mission was recognized to include encouragement of state parks, tourism, and outside partnerships.

Horace Albright, when he ran the service on Mather’s behalf and later as director, recognized that his “national” park service actually administered a regional collection of parks—far from most voters and of indirect interest to most members of Congress. To remedy this and to make the service truly national, when the service was only 17 years old he persuaded President Franklin Roosevelt to transfer historic places and certain other parklands to the National Park Service. To cement this growth, the Historic Sites Act of 1935 added whole new dimensions to the mission, including a dimension that would be accomplished by outside partners such as private owners. Yet for a long time the institutional mythology caused little of this sweeping new mission to be carried out.

World War II and its immediate aftermath transformed America. A federally sponsored development binge in the form of urban renewal, water impoundments, rivers and harbors improvements, highway development, and many other programs carried out projects on an unprecedented scale using federal dollars, licenses, or permits. These programs impacted parklands and natural and historic places on an alarming scale. By the 1960s this was enough to cause some to recognize the need for thoughtful review of development projects before committing to their execution. Regarding nature, more people began to recognize that it was not enough to save charismatic megafauna if the ecosystems upon which they depend are lost in the process. People who cared about historic places began to recognize that it was not enough to freeze in time a few national icons if vast urban neighborhoods of beautiful historic buildings—cultural resource counterparts to ecosystems—were lost. George B. Hartzog, the National Park Service’s most vigorous director, wanted his bureau firmly in the lead of the new and broader approaches that were being developed. He took strong action to put it there, ensuring that the historic units of the National Park System and the National Historic Landmark list became the foundation of the National Register of Historic Places. While he was at it, he found in the Historic Sites Act of 1935 authority to launch a program of designating National Natural Landmarks on private lands as well as other public agency lands.

The fundamental point with regard to the 1916 Act is that service leadership openly acknowledged that neither the natural resource nor the cultural resource preservation job the nation needed to have done could be done entirely within the boundaries of parks. Some vital ecosystems of both types were greater than the parks and maybe even different from them. Active cooperation, even co-management, of systems of resources would be essential. Resources unspectacular as well as charismatic, locally significant as well as nationally, privately owned as well as publicly, would all have to be considered together. Hartzog understood this, as did ecologists and historic preservationists, but unfortunately the National Park Service’s back-country mythology would delay the widespread acceptance of his encompassing vision for decades more.

Hartzog also revived a 1930s idea by embracing the concept of urban national recreation areas, apparently in the nick of time. It cannot have gone unnoticed by this prescient leader that when, in 1964 the Congress had decided to create a dedicated fund to purchase and develop parklands of national, state, and local significance, instead of lodging its administration in the National Park Service it created a brand new Bureau of Outdoor
Recreation for that purpose. Hartzog, who became NPS director the year after, would have recognized the enormous multi-level political utility of the nationwide network of State Outdoor Recreation Liaison Officers and their local contacts and counterparts. He would not let the National Park Service suffer such a loss again during his tenure.

As Congress considered the National Historic Preservation Act of 1966, with similar potential to reach state, local, and private sector interests, Hartzog virtually snatched the program away from competitors in the Department of Housing and Urban Development. He also pulled together into a single management entity all of the historic preservation programs of the service and recruited Ernest Allen Connally, an urbane and highly qualified architect and professor, to lead it. Within a few years Connally’s programs operated through a network of 59 State Historic Preservation Officers.8 Coordinated with the Advisory Council on Historic Preservation and the congressionally chartered private non-profit National Trust for Historic Preservation, this set of programs soon stood at the head of an energetic and creative network that extended to all parts of the nation. Over the next quarter-century it experienced an amazing growth in authority from executive orders and new laws that would authorize the NPS role Hartzog had envisioned. One very important increment of authority, the National Historic Preservation Act Amendments of 1980, specifically directed the National Park Service to provide leadership in historic preservation to federal agencies, states, local governments, tribes, and the private sector.9 Even then not everyone recognized the tremendous power in this set of authorities when viewed in full coordination with the National Park Service Act of 1916.

Although natural resource program leaders in the National Park Service and their colleagues in academia did much to perfect the concept of the natural ecosystem, ironically it was the cultural resource programs and their extended federal, state, local, tribal, and private sector networks that made the greatest practical application of the concept. Largely from Connally’s philosophical guidance in developing criteria for the National Register, the idea took hold that an architecturally significant district might consist of components none of which would be significant individually, and that the significance of the tout ensemble—the whole considered together, might be greater than the sum of its parts. Applied to archaeology, this eventually led to registration of wide expanses of land encompassing a substantial number of minor individual sites, but the whole of which comprised important information about the past. Applied to landscapes, minor individual evidences of human manipulation of the land such as fields, fence rows, woodlots, and orchards could be significant when considered as a whole. Eventually, the National Register would list some broad landscapes not because of human manipulation but because their “natural” condition had been revered as culturally valuable, even sacred, by specific cultures over many generations. Not only were these cultural resource applications of the ecosystem concept originally invented for natural resources, they eventually evolved to a point where “natural” resources could have cultural significance. And, through the National Historic Preservation Act and other related authorities, the significance of such places had to be taken into account when federal projects threatened them.

The National Parks Second Century Commission noted that park natural resources are often dependent upon management of ecosystems that are only partially located inside parks. Generally those ecosystems are subject to actions by other federal agencies, states, local governments, tribes, and the private sector. Not surprisingly, the commission noted that the leadership approaches of cultural resource programs
suggested a possible approach for natural resource management during the coming second century. The commission recommended a law creating a beyond-park-boundary network that would encourage preservation of natural resources as the National Historic Preservation Act encourages preservation of cultural resources.

So how does all of this extended partnership business fit together with the original charter in the 1916 Act? The key is in the 1980 statutory direction to provide leadership. For this to work, old military-based, command and control notions of leadership that have oppressed new thinking in the National Park Service must give way to more modern concepts of leadership such as creating environments in which others can succeed. Perhaps leadership in this case may be simplified to something like the following:

- exemplary management—to the 1916 standard—by the National Park Service of those few select places in the National Park System;
- thoughtful and professional application of the sometimes rigorous and sometimes very flexible approaches inherent in the historic preservation programs;
- coordination and facilitation of the federal, state, local, tribal, and private sector partnerships in a manner that makes their success as important as success within the National Park System;
- grants, tax incentives, and other forms of assistance to those whose non-federal efforts and investments produce a benefit to the general public;
- operation of the whole according to a set of systems, standards, and technical information that raises resource decisions to a professional level rather than mere opinion;
- a deliberate method of involving the entire partnership in a continuing dialogue about the importance of resources and the variety of ways in which they can be successfully treated;
- a specific method of capturing the lessons learned through the experiences of every participant in the whole partnership—park, other federal, state, local, tribal, and private sector—and of feeding those lessons back into the systems, standards, and technical information used throughout the whole partnership; and
- a conscious effort to extend the partnership beyond national boundaries in order to promote the “Century of the Environment” globally.

Of course we must not assume that the service now accomplishes even the first point, “exemplary management—to the 1916 standard—by the National Park Service of those few select places in the National Park System.” It manifestly does not. In recent years cultural resource systems, standards, technical information, and the networks that use them have been seriously diminished, and must now be rebuilt.

Fundamentally, because the parks cannot be saved only from inside the parks, the 1916 standard must serve as both an ideal and a beginning point for the far greater job that must be done. Equally fundamental, that portion of the job that lies outside parks cannot be accomplished without leadership from somewhere. The iconic status of the national parks can give prestige and power to the broader movement and the broader movement can give back an encompassing protection to the parks. In its second century,
National Park Service leadership to the historic preservation movement, broadened to include a natural resource movement, is at least as important as carrying out the 1916 mandate in direct management of the parks themselves.

References

1. The National Park Service Act of 1916 almost universally has come to be known by the jargon term “Organic Act,” although there is no law by that title. In this paper they are used interchangeably. For other considerations of the Act, see Lemons, J. (2010). Revisiting the Meaning and Purpose of the National Park Service Organic Act. Environmental Management (March, 2010); and Sellars, R. A Very Large Array: Early Federal Historic Preservation—The Antiquities Act, Mesa Verde, and the National Park Service Act. Natural Resources Journal, 47, Spring 2007, 267–328.

2. In this paper, “historic places,” “cultural resources,” and similar terms are synonymous, meaning “districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture.” “Historic preservation” more commonly applies to the work of the partnership beyond park boundaries, and “cultural resources management” more commonly applies to work in national parks and other public lands, but essentially they are the same.


4. A few hobbyists toyed with crystal radio sets in their homes, but commercial broadcasting as we know it did not exist.

5. Founded in 1919, now the National Parks Conservation Association.


8. 50 States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau. Now the network has grown to include 1,668 Certified Local Governments, 76 American Indian Tribes and Native American Organizations, and all federal land-managing agencies.

9. Specifically, the new law directed the service to “provide leadership in the preservation of the prehistoric and historic resources of the United States and of the international community of nations and in the administration of the national preservation program in partnership with States, Indian tribes, Native Hawaiians, and local governments.”
APPENDIX
Manuscript Submission

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