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APPENDIX

Submission Guidelines for Authors
This issue of JIR includes two interesting research articles in addition to several pieces in the “In Short: Reviews and Reports” section. In preparation for the upcoming special issue of JIR focusing on environmental education, I would like to call for research papers on environmental education. In addition to the more traditional research articles, I would also invite readers to submit papers on their opinions on the relationship between environmental education and interpretation. What do you think is and/or should be the role of environmental education versus interpretation? Is there a difference between the two, or is it simply an issue of semantics? “In Short” submissions surrounding the topic are also strongly encouraged. Is your park or resource approaching environmental education in a unique manner? Have you conducted an in-house evaluation study of an environmental education program for your resource?

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

—C
RESEARCH
Abstract
The Prairie Science Class is a formal partnership between the U.S. Fish and Wildlife Service’s Prairie Wetlands Learning Center and the Fergus Falls Independent School District 544. Its mission is to use the local prairie wetlands ecosystem as an integrating and motivating context to engage fifth-grade students in science, math, and writing through real world, field-based learning experiences. A formative program evaluation was conducted during the first year of its implementation to document program outcomes and areas for program improvement. A variety of quantitative and qualitative evaluation tools were used. The results of this evaluation suggest positive cognitive and affective outcomes, including concept attainment and skill development in science and writing; perceived learning in math; perceived skill growth in problem solving, technology, and working and communicating with others; and positive influences on students’ motivation toward learning, attitudes toward the prairie wetlands environment, and stewardship ethic.

Keywords
program evaluation, environmental education, environment-based education, partnerships, U.S. Fish and Wildlife Service

Introduction
The Prairie Science Class (PSC) is a formal partnership between the U.S. Fish and Wildlife Service’s (USFWS) Prairie Wetlands Learning Center (PWLC) and the Fergus Falls Independent School District 544 (ISD 544) in Minnesota. Its mission is to use the local prairie wetlands ecosystem as an integrating and motivating context to engage fifth-grade students in science, math, and writing through real world, field-based learning experiences. Program goals of the PSC include
the following: 1) developing knowledge and skills in math, writing, and science; 2) increasing motivation toward learning; 3) developing technology, problem-solving, and communication skills; and 4) fostering character skills and a stewardship ethic. The educational philosophy guiding the PSC is interdisciplinary, experiential learning through authentic, field-based experiences and constructivist approaches. Thus, at the heart of the PSC is an experiential learning philosophy, not a series of lesson plans or curriculum guides.

The PSC is an environment-based education program. Environment-based education is a broad term for formal instructional programs that adopt natural and socio-cultural environments as a context for integrating core subject areas and a source of real world projects and service-learning activities (adapted from definitions in National Environmental Education & Training Foundation, 2000 and Lieberman & Hoody, 1998). While positive environmental attitudes or a stewardship ethic are often developed through environment-based education, the focus of these programs is on student learning in the basic subject areas. Thus, it is distinguished from environmental education, which has the primary goal of environmental literacy.

There are numerous research findings supporting the elements that form the theoretical foundation of the environment-based education model. For example, research by Kyburz-Graber, Rigendinger, Hirsch, and Werner (1997) and case studies of New South Wales Government Schools (Smith, 1996) support the effectiveness of using the environment to integrate core subject areas; schools successfully used the environment to help students see the connections among traditional subject areas. The George Lucas Foundation (2002) has compiled a growing body of academic research supporting the use of project-based learning to engage students, reduce absenteeism, build problem-solving and cooperative-learning skills, and improve test scores. Work by Billig (2000), Eyler (2000) and Gardner (1992) and brain research by Wolfe (2001) support the effectiveness of authentic problem solving and project-based learning, as projects that engender “purposeful activity” promote cognitive engagement and higher-order thinking. A research literature review by Helgeson (1992) supports the claim that hands-on, inquiry-based instruction is generally more effective than traditional didactic instruction and provides evidence of the effectiveness of learner-centered and constructivist approaches in building problem-solving and higher-order thinking skills.

There are also evaluation-based studies supporting the use of environment-based education. Data from 40 environment-based schools nationwide suggest that students learn more effectively within these environment-based programs than within a traditional education framework, as students in these programs had improved performance on standardized tests, reduced classroom management problems, and increased enthusiasm for learning (Lieberman & Hoody, 1998). These findings are consistent with the State Education and Environment Roundtable’s study of California schools (2000) and NEETF’s Environment-based Education: Creating High Performance Schools and Students, studies further supporting the premise that, “compared to traditional educational approaches, environmental-based education improves academic performance across the curriculum” (NEETF, 2000, p.1). Studies by Athman and Monroe (2004) and Ernst and Monroe (2004) lend additional support to the educational relevance of environment-based education, with positive student outcomes in critical thinking skills, disposition toward critical thinking, and achievement motivation.

While these research findings supported the initial decision to develop a partnership
and implement an environment-based program, the USFWS and ISD 544 felt it was necessary to further investigate outcomes associated with the Prairie Science Class. Consequently, during its first year of implement, a formative evaluation of the Prairie Science Class was conducted to assess program outcomes for justification to stakeholders, support decisions regarding program continuation or expansion, and identify areas for program improvement.

Program Description
During the 2003–2004 school year, 50 fifth-grade students were involved in the PSC, spending two hours each day at the PWLC, a site within the USFWS National Wildlife Refuge System. One section of 25 students was at the PWLC in the morning, and the second section spent the afternoon at the PWLC. Students spent the remainder of their school day at the Fergus Falls Middle School, where they received their reading, social studies, physical education, and health instruction.

While at the PWLC, the PSC teacher (an ISD 544 employee) and PWLC environmental education specialists (USFWS employees) provided instruction in the curricular areas of science, math, and writing through a series of seasonal, integrated units based on the prairie wetlands ecosystem. For example, the year began with a month-long unit on migration. Students were involved with field-based activities, including monarch butterfly tagging and mallard duck banding, which incorporated the study of migration patterns, habitat needs, and the scientific process of answering questions through data collection and interpretation. Students built estimation and measurement skills as they measured bill, wing, and tarsus length and weighed their mallards. Fractions and percents took on new meaning as students studied them in the context of prairie wetland habitat loss. Students summarized and reflected on their learning through writing assignments, such as postcards written to the students who live near the monarchs' wintering range in Mexico and scientific reports on the process of capturing and banding ducks. The migration theme and the authentic, field-based experiences were the context for weaving together learning in the traditional subject areas.

A unique aspect of the PSC is that it was based at the PWLC, not at the middle school with occasional or even regular visits to the partnering natural area. The PWLC and its 325 acres of prairies and wetlands became the students’ primary classroom. The USFWS contributed indoor classroom space in the PWLC, access to the prairie wetlands field sites, field equipment, and approximately 25 hours per week of an environmental education specialist’s time. It also contributed a wealth of resources in the biological sciences, including wildlife biologists’ expertise, as well as books, slides, maps, and databases of wildlife and prairie wetlands information. ISD 544 contributed the salary for two teachers, one stationed at the PWLC and the second stationed at the Fergus Falls Middle School, who was responsible for teaching the PSC students when they were not at the PWLC. They provided the bus transportation to the PWLC, classroom supplies and computers, and custodial services and supplies. The program also received support from a variety of local, regional, and national organizations, which provided handheld computers for each student, additional field equipment, and classroom resources.

Because the PSC is located at a site within the USFWS National Wildlife Refuge System, the mission and goals of the USFWS, as well of the PWLC, were a consideration in the initial decision to implement the PSC. Previously, the PWLC had used a combination of inter-
pretive programs and exhibits, day-use environmental education programs, and residential programs to carry out its mission of providing interpretive and environmental education opportunities for students, private landowners, and the general public relating to the protection, enhancement, and restoration of the prairie pothole ecosystem. While the USFWS and PWLC strongly value partnerships, they also needed to ensure the PSC, with its primary focus on learning in the core subject areas, furthered their mission. Without enough time, money, or staff to do everything, the USFWS needed a basis for deciding if the PSC was “worth” pulling resources away from more traditional environmental education and interpretation programs and services.

From the perspective of ISD 544, the decision to implement the PSC was also a significant commitment in terms of staff and resources. With a primary responsibility for ensuring student learning in core subject areas, ISD 544 wanted to make sure the PSC provided an appropriate, alternative learning environment. Thus, both partners were in strong agreement regarding the need for a formative evaluation to assess program outcomes and areas for improvement and guide decisions relating to future implementation of the PSC.

**Evaluation Methodology**

**Evaluation Purpose and Questions**

During the first year of PSC implementation, a formative evaluation was conducted by ISD 544, with assistance from the USFWS environmental education specialist at the PWLC. Formative evaluations are conducted to furnish information for guiding program improvement and emphasize findings that are timely, concrete, and immediately useful (Rossi, Lipsey & Freeman, 2004). The typical audience for formative evaluations is stakeholders desiring information regarding the need for the program, the program’s implementation, or its impact (Rossi, Lipsey & Freeman, 2004). The formative evaluation of the PSC was guided by a utilization-focused approach to program evaluation. A utilization-focused approach, according to Patton (1997), is a process for helping the primary users of the evaluation select the most appropriate focus, design, methods, and data-collection tools based on their intended uses for the evaluation and their given situation.

Stakeholders from the USFWS and ISD 544 met to develop an evaluation plan based on their collective desire to assess program outcomes for justification to stakeholders, support decisions regarding program continuation or expansion, and identify areas for program improvement. Their evaluation plan included four questions, which served to guide this formative evaluation:

1. Have the students attained grade-level proficiency in science, math, and writing?
2. Have the students’ science process, problem-solving, and technology skills and their skills in working cooperatively and communicating with others increased?
3. Do the students have a more positive attitude toward learning and the prairie wetlands environment and a stronger stewardship ethic and sense of civic responsibility than their peers in traditional classrooms?
4. Did the PSC meet the needs of the students and parents, the Fergus Falls Independent School District 544, and the U.S. Fish and Wildlife Service?
Participants
The primary participants in this evaluation were the 50 fifth-grade students in the PSC. Forty fifth-grade students (two classes from ISD 544) receiving traditional classroom instruction served as the control group; their participation was limited to the affective pre- and post-survey and the state tests in reading, math, and writing. State test scores from all of the fifth-grade students in ISD 544 were also used in the evaluation \( (n = 236) \). In addition to the students, parents of the PSC students, the Fergus Falls Middle School Principal, the ISD 544 superintendent, the PWLC supervisory park ranger, the USFWS project leader of the Fergus Falls Wetland Management District, and the Region 3 chief of the National Wildlife Refuge System participated in this evaluation as program stakeholders.

Data-Collection Tools
Following the utilization-focused approach, the stakeholders determined a variety of tools were needed to address the four evaluation questions and the specific needs of the evaluation users. This multiple method approach is supported in the evaluation literature: Evaluators must be able to use a variety of tools and be “flexible in matching research methods to the nuances of particular evaluation questions and the idiosyncrasies of specific decision-maker needs” (Patton, 1997, p. 277). Patton later describes how a quantitative indicator can provide a generalizable picture of an issue, while qualitative information can put faces on the numbers or illustrate the stories behind the quantitative data (Patton, 2002). He writes, “Qualitative and quantitative data can be fruitfully combined to elucidate complementary aspects of the same phenomenon” (2002, p. 558).

Thus, tools were selected based on the evaluation questions, resources available, the intended uses for the evaluation, and the desire to minimize additional layers of student assessments. The data collection tools are described below:

- **Minnesota Comprehensive Assessments in Math and Writing**: The MCAs are part of the educational accountability system in Minnesota. All public school fifth-graders in Minnesota take a reading, math, and written composition test during the spring of the school year. The format of the reading and math test is multiple-choice and short answer. Students are given a topic and write one composition for the writing test.

- **Affective Self-Report**: The affective self-report was a 20-item survey that was developed specifically for this evaluation. It measured attitudes toward learning (eight items), attitudes toward the prairie wetlands environment (five items), stewardship ethic (four items), and sense of civic responsibility (three items). Items were adapted with permission from the Achievement Motivation Inventory (Athman, 2003) and the Earth Force Survey (Melchior & Bailis, 2003). The items were scored on a five-point Likert scale (“strongly disagree” to “strongly agree”). This self-report was scored through four subscales, one for each of the four constructs being measured. Higher scores on the subscales indicated stronger or more positive levels of the constructs being measured.

- **Skills Self-Report**: The skills self-report was a 14-item survey that was developed specifically for this evaluation. It was designed to measure science process skills (six items), problem solving skills (three items), technology skills (two items), and skills in working and communicating with others (three items). Items were developed from curricular objectives in these areas. Items were scored on a four-point Likert scale (“not at all” to “very well”). The format of the skills self-report was a post-program survey, asking stu-
dents to provide a “before” and “after” assessment of their skills following program completion (“How well could you do each of the following at the beginning of the school year?” and “How well can you do each of the following now?”). The purpose of this format was for students to assess their skills based on the same reference point; for example, a student’s understanding of “collecting data to answer a research question” may have changed over the course of the school year (Melchior & Bailis, 2003). The scores of this self-report were reported at the item level, not by sub-scales. This survey format and scoring recommendations were adapted with permission from the Earth Force Survey (Melchior & Bailis, 2003).

Student Interviews: Students were selected for the interviews by the PSC teacher. The teacher was asked to select five students from each PSC section; the five students were to represent the range of achievement levels and a range of displayed interest in the program. Interviews were conducted according to techniques described by Lindolf (1995). PSC students were interviewed individually for approximately 20 minutes. The interviews were audio-taped and transcribed verbatim. The following questions were used to initiate the discussion:

1. Tell me about your experience with the PSC.
2. What are some of the things you learned?
3. Do you think the PSC made it harder or easier to learn writing, math, and science? Can you give some examples?
4. Do you feel differently or the same about school or learning? If differently, how?
5. Do you feel differently or the same about nature, or wildlife, or the environment? If so, how?
6. Do you have suggestions for how we can make it better for next year?
7. Is there anything else you’d like to tell me about the PSC?

Parent Survey: The parent survey was a 13-item survey developed specifically for this evaluation. It was designed to measure parents’ perceptions of cognitive and affective program outcomes and satisfaction with the program. Items were developed based on the program goals and from concerns initially expressed by stakeholders. Items were scored on a four-point Likert scale (“strongly disagree” to “strongly agree”). This survey was designed to be analyzed at the item level. The parent survey was mailed to all of the parents of PSC students.

Stakeholder Interviews: Interviews were conducted with key program stakeholders and decision-makers according to techniques described by Lindolf (1995). The interviews were audio-taped and transcribed verbatim. Stakeholders were asked to talk about their reactions to the program and about the degree to which the program supported the mission and goals of their organizations. No question guide was used.

Procedures
A USFWS environmental education specialist/program evaluator from the PWLC was responsible for administering the evaluation tools according to ISD 544 and USFWS poli-
### Table 1. Summary of Data Collection and Analysis

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Instrument Description</th>
<th>Constructs Assessed</th>
<th>Information Source</th>
<th>Time of Implementation</th>
<th>Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minnesota Comprehensive Assessments</td>
<td>Part of the educational accountability system in MN</td>
<td>Math, writing, reading achievement</td>
<td>PSC students ($n=50$); ISD 544 fifth-grade students in traditional classrooms ($n=186$); state average scores for MN fifth-graders</td>
<td>March 2004</td>
<td>Independent-samples t test</td>
</tr>
<tr>
<td>Affective Self-Report</td>
<td>20-item survey; Likert items on five-point scale (strongly agree to strongly disagree)</td>
<td>Attitudes towards learning and the prairie wetlands environment, stewardship ethic, sense of civic responsibility</td>
<td>PSC students ($n=45$); ISD 544 fifth-grade students in traditional classrooms ($n=40$)</td>
<td>September 2003 (pretest) and May 2004 (posttest)</td>
<td>Multiple linear regression</td>
</tr>
<tr>
<td>Skill Self-Report</td>
<td>14-item survey; Likert items of four-point scale (not at all to very well); item format “How well could you do each of the following at the beginning of the school year? Now?”</td>
<td>Science process skills, problem-solving skills, technology skills, and skills in working and communicating with others</td>
<td>PSC students ($n=42$)</td>
<td>May 2004</td>
<td>Dependent- samples t test</td>
</tr>
<tr>
<td>Student Interviews</td>
<td>15-minute interviews using a question guide</td>
<td>Cognitive and affective program outcomes; program satisfaction; areas for program improvement</td>
<td>PSC students representing range of achievement levels ($n=10$)</td>
<td>April 2004</td>
<td>Analytic induction</td>
</tr>
<tr>
<td>Parent Survey</td>
<td>13-item survey; Likert items on four-point scale (&quot;strongly agree&quot; to &quot;strongly disagree&quot;)</td>
<td>Cognitive and affective program outcomes; program satisfaction; areas for program improvement</td>
<td>Parents of PSC students ($n=39$)</td>
<td>March 2004</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>Stakeholder Interviews</td>
<td>Formal and informal interviews</td>
<td>Program outcomes and impact; degree program supported agency/organization goals; areas for program improvement</td>
<td>Middle School Principal; ISD 544 Superintendent; Regional Chief of National Wildlife Refuges; USFWS Fergus Falls Wetland Management District Project Leader; PWLC Supervisory Ranger ($n=5$)</td>
<td>April – June 2004</td>
<td>Analytic induction</td>
</tr>
</tbody>
</table>
cies. All data collection took place over the 2003–2004 school year, the first year of program implementation. The pre-program affective self-report was administered to the PSC and control students during the first week of the school year. The MCAs were administered in March according to state testing procedures. The parent survey was mailed to PSC parents in March. Student interviews were conducted in April, and stakeholder interviews were conducted in April, May, and June. The post-program affective self-report was administered to the PSC and control students during the last week of the school year. The PSC students also completed the skill self-report during the last week of the school year. Data collection instruments, participants, and procedures are summarized in Table 1.

Data Analysis
Transcripts from student interviews and stakeholder interviews were transcribed verbatim and then analyzed by a process of becoming familiar with the data, coding and classifying data into themes and synthesizing the themes into general conclusions (Gay & Airasian, 1996). The criteria for the creation of a theme were the frequency, intensity, and specificity of responses (Krueger, 1998). The focus of this process was a modified analytic induction approach, where the emphasis is on examining preconceived hypotheses without the pretense of the mental blank slate advocated in purer forms of phenomenological inquiry (Patton, 2002). In the results section, these themes are stated, when relevant, and illustrated by verbatim quotations. To avoid conveying the impression that the results can be projected to all PSC students, numbers and percentages for responses have not been reported.

The data from the parent surveys were analyzed using descriptive statistics. The survey was analyzed at the item level, with percentages calculated for each Likert response category. The data from the MCAs, the affective self-report, and the skill self-report were analyzed using inferential statistics. For the data from the MCAs, an independent-samples t test was used to determine if there were significant differences between scores of the PSC students and the control students. Average PSC scores also were compared with the state averages, but lack of individually reported state scores prevented tests for statistical significance from being conducted. A dependent-samples t test was used to analyze the data from the skill self-report to determine if there was significant growth in students’ perceived skill levels from the beginning to the end of the year. Multiple linear regression was used to analyze data from the affective self-report to determine if PSC students scored higher than the control students, when controlling for initial affect level; the analyses were conducted on each sub-scale of the affective self-report. The significance level for each analysis was _ = .05. Missing data were handled by excluding cases listwise.

Limitations
There were several significant limitations to this study, which will be stated here and examined more closely in the discussion section. Due to the educational setting, the evaluation questions involved in this study could not be investigated feasibly through a randomized, experimental design. Thus, the internal validity of the study was weakened. The internal validity was also weakened from a lack of control groups for the majority of the evaluation tools. The internal validity was further weakened due to the nature of the MCA; it is not given yearly, nor it is it something that can be given as a pre- and posttest. Thus, the ability to make causal attributions is strongly limited.

At the request of ISD 544 to minimize the intrusiveness of data collection on class time
<table>
<thead>
<tr>
<th>How well could you do each of the following?</th>
<th>Mean at Beginning of School Year</th>
<th>Mean at End of the School Year</th>
<th>SE</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Make observations about the environment around me.</td>
<td>2.00</td>
<td>3.63</td>
<td>.11</td>
<td>14.27</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>2. Read the landscape.</td>
<td>1.46</td>
<td>3.08</td>
<td>.01</td>
<td>16.74</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>3. Make a reasonable guess about why something in nature happens.</td>
<td>2.13</td>
<td>3.31</td>
<td>.01</td>
<td>15.46</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>4. Collect data to answer a research question.</td>
<td>2.08</td>
<td>3.40</td>
<td>.14</td>
<td>9.16</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>5. Find information from more than one place when working on a project or a report.</td>
<td>2.42</td>
<td>3.35</td>
<td>.12</td>
<td>7.55</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>6. Ask questions to find out more information.</td>
<td>2.29</td>
<td>3.38</td>
<td>.13</td>
<td>8.17</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>7. Think about what I’ve done to help me learn.</td>
<td>2.02</td>
<td>3.02</td>
<td>.12</td>
<td>8.40</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>8. Use the internet (at school or home) to find information.</td>
<td>2.60</td>
<td>3.33</td>
<td>.15</td>
<td>4.92</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>9. Use a handheld to collect or record data.</td>
<td>1.56</td>
<td>3.46</td>
<td>.17</td>
<td>11.21</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>10. Work with others as a team or in small groups.</td>
<td>2.69</td>
<td>3.56</td>
<td>.11</td>
<td>7.95</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>11. Use field equipment to gather information or data.</td>
<td>1.71</td>
<td>3.44</td>
<td>.15</td>
<td>11.91</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>12. Identify the plants and animals that live in the prairie wetlands.</td>
<td>1.71</td>
<td>3.40</td>
<td>.12</td>
<td>14.10</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>13. Share my ideas with others through speaking.</td>
<td>2.33</td>
<td>3.06</td>
<td>.01</td>
<td>7.47</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>14. Share my ideas with others through writing.</td>
<td>2.15</td>
<td>3.42</td>
<td>.11</td>
<td>11.96</td>
<td>47</td>
<td>&lt; .01</td>
</tr>
</tbody>
</table>

* _n = 48._

**Table 2. Summary of Average Responses on the Skill Self-Report**
and student learning, single measures of the constructs of interests were used, which may have threatened construct validity from mono-operation bias. To decrease this threat, quantitative data collected from students was supplemented with qualitative data from student interviews and quantitative data collected through parent surveys. This effort to minimize the amount of student testing also led to the use of indirect measures of learning (self-reports). Thus, some of the results presented are perceived outcomes, which may be different from actual outcomes.

**Evaluation Results**

To address the questions guiding this program evaluation, the results are presented by question, rather than by data collection tool, as each question is answered through a variety of evidence gained through multiple evaluation tools.

1. **Have the PSC students attained grade-level proficiency in science, math, and writing?**

The results of the independent-samples *t*-test for the reading portion of the MCAs indicated a statistically significant difference between the scores of PSC students and the scores of the control group of their peers in traditional ISD 544 classrooms, *t*(233) = 2.23, *p* = .03. The results for the writing portion also indicated a statistically significant difference between the scores of the PSC students and the scores of their peers in traditional ISD 544 classrooms, *t*(232) = 2.82, *p* = .01. Thus, PSC students’ scored significantly higher than their peers in traditional ISD 544 classrooms on the MCAs in reading and writing. PSC students performed at a similar level to their peers on the math portion of the MCAs, *t*(212) = 1.28, *p* = .20. In addition, the average scores of PSC students were compared against the state averages in math and reading (a writing state average was not provided). The average reading score of PSC students was higher than the state average (PSC *M* = 24.4, State *M* = 23.4); inferential tests could not be conducted due to the reporting format of state averages.

Several themes emerged from the student interviews that lend further insight into this evaluation question (see Table 4). Students felt they learned science, math, and writing and described this learning as stronger than in previous school years. Another emergent theme was students’ attribution of this learning to the real-world applications of science, math, and writing using the prairie wetlands environment.

> “Things you read in a science book you just go, ‘What? I don’t get it.’ And from the little pictures, it’s hard to understand. But on the prairie, you can see it up close and feel it. It’s easier to understand when I get to see it.”

> “When we compare math problems to the outside, like making estimates outside, it’s easier—like what percentage of Mallard Marsh is covered in ice. It’s actually easier to learn outside.”

> “We write a lot, and my spelling really improved. You can write about observations, and that helps because you are writing what you saw. At first, you’d just write about one thing, but now you have a lot more to write about because we’ve been observing better.”

In addition to students’ test scores and interview responses, two items on the parent survey addressed this evaluation question (see Table 3). While they are limited because they address parents’ perceptions of student learning, the results of these items are consistent with the stu-
<table>
<thead>
<tr>
<th>Domain</th>
<th>Summary</th>
</tr>
</thead>
</table>
| Perceived Outcomes in the Cognitive Domain | • Students felt they have learned science concepts and skills and describe their learning in science as stronger than in fourth grade. They attributed this to the time spent outside doing science in the PSC, rather than just reading about science from a text.  
• Students felt they have learned math concepts, attributing it to the real-world applications of math using the prairie wetlands environment.  
• Students felt they have become more skilled in writing through their experience with the PSC. They attributed this to the amount of writing they do and being able to write about things they’ve experienced in the field.  
• Students felt that being in the PSC has helped them become better thinkers. They attributed this to having to reflect on what they learn and having the opportunity to think about things they have actually seen or experienced.  
• Students felt they have become better observers through the PSC, attributing it to the amount of time spent outside observing |
| Perceived Outcomes in the Affective Domain | • Students felt the PSC helped them become more interested in school and learning. They attributed this to the opportunity to spend time outside, the variety in the school day, and the opportunity to learn things in ways that are different from traditional instruction.  
• Students felt the PSC improved their classroom behavior and promotes a sense of belonging/community.  
• Students felt the PSC had a positive influence on their knowledge about and attitudes toward nature and the environment.  
• Students felt the PSC had a positive influence on their interactions with the environment. |
| Student Reactions and Suggestions          | • Students described their experience with the PSC as positive and something they’d recommend to others.  
• Students recommended spending more time in the field and traveling to less-visited places on the prairie.  
• Students would like to spend more of their school day at the PSC.  
• Students would like to continue the PSC as sixth-graders.  
• Students recommended expanding the program so that other students have a chance to experience the PSC. |

*\( n = 10 \)

Table 3. Summary of Average Responses of the Parent Survey*
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<thead>
<tr>
<th>Domain</th>
<th>Perceived Outcomes in the Cognitive Domain</th>
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<tbody>
<tr>
<td></td>
<td>• Students felt they have learned science concepts and skills and describe their learning in science as stronger than in fourth grade. They attributed this to the time spent outside doing science in the PSC, rather than just reading about science from a text.</td>
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<tr>
<td></td>
<td>• Students felt they have learned math concepts, attributing it to the real-world applications of math using the prairie wetlands environment.</td>
</tr>
<tr>
<td></td>
<td>• Students felt they have become more skilled in writing through their experience with the PSC. They attributed this to the amount of writing they do and being able to write about things they’ve experienced in the field.</td>
</tr>
<tr>
<td></td>
<td>• Students felt that being in the PSC has helped them become better thinkers. They attributed this to having to reflect on what they learn and having the opportunity to think about things they have actually seen or experienced.</td>
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</tbody>
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\[ n=10 \]

Table 4. Summary of Emergent Themes from Student Interviews*
dent data. Of the PSC parents who completed the survey \( (n = 39) \), 100 percent perceived their children learned science, math, and writing concepts and skills at least as well as they would have in a traditional classroom; 98 percent perceived their children learned the concepts and skills better than they would have in a traditional classroom. Parents’ written comments on the survey also suggested the PSC may work well for students with a variety of learning preferences and needs.

“It’s made science and math practical. These kids are able to see and experience how and why they would apply the concepts they are learning to real life.”

“My son wasn’t a big math guy last year, and all of a sudden this year, he seemed to enjoy it and doesn’t seem to be as challenged by it. He explained some of the things he does out here—like measuring the duck’s bill or 100 meters on the prairie; it’s a neat way of learning.

“My daughter has ADHD, but you wouldn’t know it this year. You mix indoor and outdoor learning, and it’s extremely helpful for her concentration. So it’s good for kids with special needs. We had her on Ritalin and that didn’t work for her, but this program has.”

2. Have the students’ science process, problem-solving, and technology skills and their skills in working cooperatively and communicating with others increased?

All 14 items on the student skill self-report showed a positive, statistically significant increase in students’ assessments of their science process, problem-solving, and technology skills, as well as their skills in working and communicating with others. The results of the dependent-samples \( t \) test for each item are listed in Table 2. These results were supported by the results of the student interviews, as an emergent theme was improvement of observation, thinking, and problem-solving skills (see Table 4). Students attributed this improvement to the opportunity to practice these skills in the field setting, the opportunity to think about what they saw on the prairie, their field-based projects, and the time spent in reflection.

“I’ve learned to observe. When you go outside, usually if you see a butterfly or frog you’ll be like, ‘Oh, that’s just a butterfly.’ Maybe you’ll try and catch it, but you won’t actually look at it that closely. But when you learn to observe, you can see what it’s like or how it’s different from something else, and you can compare it to other things.”

“I like hearing everybody else’s opinions about things during circle. It makes me consider other things.”

“I think about things longer to make sure that what I say is really what I think. I make sure I’ve seen everything about it before I say something. We have to think more here than at school.”

“It’s made me a better thinker because it helps you take the time to think. Like if you are outside and looking at tracks, you think about what the animal was doing and why it was there. In the weather, you think about how the temperatures have changed. Yesterday the humidity was 88 percent and today it was 100 percent. And you think about the difference and what effect that will have.”
3. Do the students have a more positive attitude toward learning and the prairie wetlands environment and a stronger stewardship ethic and sense of civic responsibility than their peers in traditional classrooms?

When controlling for initial attitude toward learning, the results of the multiple linear regression indicated no significant differences between the PSC students’ attitudes toward learning and that of their peers, \( b = .01, t(82) = .01, p = .42 \). While the affective self-report did not show that the PSC improved students’ attitudes toward learning, an emergent theme from the student interviews was the PSC helped them become more interested in school and learning (see Table 4). Another related theme that emerged from students’ responses was the PSC improved their classroom behavior and promoted a sense of belonging.

“Last year I would wake up and think, ‘Oh no, another school day.’ Now I like to get up in the morning, and I love to come to the PSC; I just can’t wait to get here. That’s seriously how I feel.”

“It changes your attitude. Fourth grade didn’t go too well; I got detention all the time. This year I haven’t had any detention. I stay out of trouble because I have more to do and because I don’t want to get kicked out of it because it’s really good here. I like coming to school this year. Last year I played sick six times. This year, none”

The results of the student interviews were supported by the parent survey results (see Table 3). Of the PSC parents who completed the survey (\( n = 39 \)), 98 percent felt their children were more excited about school because of the PSC. All of the PSC parents who completed the survey felt their children expressed a positive attitude toward the PSC and were interested in discussing what they were learning in the PSC at home. Written comments on the survey supported these findings, as parents described the PSC as motivating their children toward learning.

“It used to be, ‘What did you do in school today?’ and they’d say, ‘Nothing.’ Now we don’t get that. Now they tell us what they did on the prairie.”

“Kids love to be outdoors, and that’s motivating. The fact that she can relate more to her learning helps her understand it better. Being able to go out and see it and smell it and touch it—that is what works for her.”

When controlling for initial attitudes toward the prairie wetlands environment, the results of the multiple linear regression indicated a positive, significant difference between the PSC students’ attitudes and those of their peers receiving traditional instruction, \( b = .31, t(82) = 2.39, p = .02 \). This suggested PSC students had a more positive attitude toward the prairie wetlands environment than their peers, a finding supported by the results of the student interviews. A theme that emerged from the student interviews was the positive influence of the PSC on students’ attitudes toward nature and the prairie wetlands environment.

“It’s changed the way I feel about nature. I think about what I’ve seen, and I read the land a lot.”

“I used to not really like nature all that much, but now I have an interest in it because we learned about all the different things that are in the environment.”
“Last year I liked wildlife just because you can hunt it. But this year, I also like it because it’s interesting.”

When controlling for initial level of stewardship ethic, there were no significant differences between the PSC students’ stewardship ethic and that of their fifth-grade peers in traditional classrooms, $b = .19, t(82) = .80, p = .46$. While the affective self-report did not show the PSC improving students’ stewardship ethic, an emergent theme from the student interviews indicated a positive influence of the PSC on their actions in the environment.

“I definitely care more about wildlife and the environment now that I’m in the PSC. When I’m walking, last year if I’d see an ant, I’d step on it because my friends would. But this year, I never would. We should take care of the environment—even ants.”

When controlling for initial sense of civic responsibility, the results of the multiple linear regression indicated no significant differences between the PSC students’ sense of civic responsibility and that of their fifth-grade peers’ receiving traditional instruction, $b < .01, t(82) = .68, p = .50$. This is consistent with the results of the student interviews, as no themes relating to civic responsibility emerged.

4. Did the PSC meet the needs of the students and parents, ISD 544, and the USFWS?

According to the results of the interviews, students described their PSC experience as positive and as something they would recommend to others (see Table 4). Students also expressed the desire to participate in the PSC as sixth graders and recommended that it be expanded so that more students could participate.

“It’s better than I thought it would be. I like that we wonder about things and discuss things more.”

“I think you should expand the program so that a lot more kids can do it, because all my friends from my old school are asking what it’s like on the prairie, and then maybe they could have the chance next year to try it for themselves.”

“We are learning things in school, but we are learning a lot more here. Learning is easier when you actually see what you are learning about. It’s a fun way to learn.”

These results were supported by the results of the parent survey (see Table 3). Parents were overwhelmingly positive about their children’s experiences with the PSC. All of the survey respondents ($n = 39$) had a positive impression of the effects of the PSC on their children, felt their children benefited in ways that could not be achieved through a traditional program, and would recommend the program to others. All of the respondents also felt the PSC should be continued.

“We have been extremely pleased with the PSC. In addition to providing a very unique, hands-on learning environment, the class has given my child knowledge about the natural world that will last a lifetime.”

“Please keep it going and dream up more innovative programs for other grade levels!”

“I think it’s a wonderful opportunity for kids to experience all they have with the hands-on opportunities, rather than trying to imagine these experiences through a textbook.”
According to the results of stakeholder interviews, the PSC met the needs of ISD 544. The PSC was described by the superintendent and middle school principal as a positive cooperative effort to implement an innovative program with strong educational results. They also felt the program built a learning community atmosphere and that students with previously low attendance had higher attendance due to the PSC. They reported that the program retained at least three students who otherwise would have attended school in other districts and that phone calls were received from parents of first and second graders, asking for their children to be placed on a PSC waiting list. Parents of 148 of the 200 fourth-grade students have requested that their children participate in the PSC for the 2004–2005 school year.

“The PSC demonstrates what is right in education. This is what makes public education stronger.” —ISD 544 Superintendent

“It’s been a great cooperative effort. It’s shown that the district is willing to take a chance and look at something a bit innovative and give our kids a chance to learn in a different setting. It opens up all kinds of possibilities for helping students become productive learners. We are trying to create life-long learners and good citizens; we are trying to create people that respect their environment; that’s why we are excited about the possibilities to expand this program. We were able to directly impact 50 students this year, but if we could provide that kind of a concentrated experience for every student, imagine the impact we could have.” —Middle School Principal

The results of the stakeholder interviews also indicated the PSC met the needs of the USFWS. The daily exposure to the prairie wetlands environment and the time spent in field-based learning experiences was vital to meeting the needs of the USFWS. The Service felt the PSC was a cost-effective way to gain maximum environmental education outcomes. The mission of the USFWS was supported by the PSC, as it fostered an awareness of the USFWS mission and an environmental ethic. The PSC also supported outreach into the local and regional community through PSC families visiting the PWLC, communication with and support from community members, and positive media coverage. The PSC highlighted what can be gained through meaningful partnerships and has the potential to serve as a model for environmental education reform within the USFWS.

“The PSC is a model for changing the way we educate children in the environmental sciences. I’ve been in the Service for 28 years and in all those years, I’ve never seen a program like this. I’d like to use this program as an example of a partnership and a model for environmental education and expand it throughout the nation’s refuge system. That would be my honest hope.” —Region 3 Chief of the National Wildlife Refuge System

“We are reaching students on a repeated and long term basis. This is critical in building a land ethic within students and giving them the tools to become informed decision makers in the future. By educating students within the prairie wetlands environment, we are able to fulfill both national missions (providing environmental education) and local missions (education about the prairie pothole region). The PSC demonstrates quality, meaningful environmental education. We’ve had inquiries about replicating this program from refuges throughout the system and from other school districts in Minnesota.” —PWLC Supervisory Park Ranger
Discussion

An initial concern raised by ISD 544 was the possibility that this nontraditional learning environment would negatively affect student learning; while students’ environmental interest and skills might grow, students would not master the content in the traditional subject areas. Unfortunately, lack of an assessment at the beginning of the year prevents determination of whether PSC students began with higher achievement levels than their peers in traditional classrooms. However, by scoring at levels at or above their peers, it can be inferred that despite participation in the PSC and its nontraditional learning environment, students’ academic performance in traditional subject areas (math, science, and writing) were at levels acceptable to the state.

In addition, parents and students felt participation in the PSC led to growth and mastery in the traditional subject areas. This sense of academic self-efficacy could be considered an indicator of positive impact on learning and achievement, as academic self-efficacy has researched-based links to academic achievement. Students who feel confident in their cognitive skills to perform an academic task are more likely to exert effort and become cognitively engaged in the task (Pintrich & Schrauben, 1992). While high levels of self-efficacy may not lead directly to improved academic performance, it does lead toward increased cognitive engagement in the task, which does have a direct influence on academic performance (Pintrich & Schrauben, 1992). This is consistent with studies where academic self-efficacy and effort-based notions of achievement were positively related to metacognitive knowledge and strategy use, as well as actual performance (Borkowski, Carr, Rellinger, & Pressley, 1990). Further, when learners perceive they have been successful at an endeavor, they are more likely to be motivated to learn in the future and to persist when faced with a difficult task (Voke, 2002).

An area of divergence in quantitative and qualitative data was math outcomes. Students and parents perceived positive learning outcomes in math, yet results of the MCA found no difference between PSC students’ math scores and the math scores of their peers in traditional classrooms. This inconsistency may indicate that learning outcomes in math were only perceived. On the other hand, students’ perceptions and the descriptive anecdotes they shared may reflect actual learning of math concepts and skills, but concepts and skills that were not assessed by the MCAs.

Another area for discussion is the second evaluation question, which addressed skill growth. This instrument was a self-report; thus, it is unknown as to whether the skill growth was perceived or if actual growth took place. A further limitation is that the format of the self-report may have been leading; at the end of a program, students may know they should have improved and thus report improvement. Also, it is difficult to know if this growth in skills was due to the PSC or to cognitive maturation over the school year, as the skill self-report was not given to the control class.

The results of students’ interviews, however, suggest that skill growth was due to the PSC, as students attributed skill growth to instructional strategies (the field-based applications, for example) that are not a part of the traditional classroom experience. The qualitative responses suggest skills in observation, listening to others, problem solving, and thinking were strengthened. As described earlier, perceived growth in these skill areas is important, as it indicates academic self-efficacy, which has research-based links to academic performance (Pintrich & Schrauben, 1992). However, in order for these results to be considered conclusive evidence of skill development, additional assessment (through methods
other than self-report) is definitely needed. This is an area for further attention in future program evaluations.

Related to the affective outcomes addressed in the third evaluation question, the qualitative and quantitative suggest different conclusions for attitudes toward learning, stewardship ethic, and civic responsibility. It is possible that the affective self-report did not contain enough items to provide a reliable and valid assessment of these constructs. It is also possible that the posttest data from the control group was biased. The teachers of the control students expressed concern over whether the findings of this evaluation would reflect poorly on their teaching; this concern may have been shared with their students, affecting the students’ ability to respond honestly to the items. However, the specificity, intensity, and frequency of the qualitative responses and the agreement between student and parent responses suggest there were positive outcomes in these three constructs. Thus, regardless of whether the PSC students had more positive attitudes and a stronger stewardship ethic or sense of civic responsibility than their peers, their perception of the experience overall was a positive one.

Regarding the fourth evaluation question, the stakeholder interviews may have provided an opportunity for bias. Stakeholders may have felt the need to give the program a “stamp of approval,” rather than critically reflect on whether the PSC did or did not meet their needs. However, given the specificity and intensity of the stakeholder responses and their initial concerns regarding carrying out their respective missions and responsibilities, it would seem their responses do indeed provide valid information. In summary, the results from this question, and the collective results from all four questions, are not conclusive evidence. Instead, the results represent a utilization-focused attempt to collect information for the purposes of informing decisions and clarifying areas for improvement. As Patton writes, “As not everything can be done, there must be a basis for deciding which things are worth doing” (1997, p. 11). Thus, the focus for this evaluation was utility, driven by the belief that some information is better than no information.

**Recommendations**
The data collection tools collectively generated several areas for potential program improvement. Students suggested spending more time in the field and traveling to less-visited places on the prairie. Students also suggested spending more of their school day at the PSC. Parent suggestions included increased parent communication on learning activities through weekly rather than monthly updates and increased storage area at the PWLC for winter clothes and school supplies.

Findings from this program evaluation also provided recommendations for future implementation:

- **Program expansion** – Students, parents, ISD 544, and the USFWS collectively agreed that the PSC should be expanded to provide more fifth-grade students with the opportunity to participate and to accommodate growing parent and student interest in the program.

- **Retain program length and grade level** – Stakeholders felt program length (daily participation over the course of a school year) was important, as program outcomes would likely decrease if the amount of time spent in the program decreased. Stakeholders agreed that fifth grade was a good fit for the PSC, given the fifth-grade
science standards’ emphasis on life science and environmental science. In addition, the cognitive level of fifth graders allows for relatively in-depth field study, yet fifth-grade students appear to be young enough to interact with the environment in a playful, wonder-filled manner.

- **Continued evaluation and monitoring of student progress** – Given the emphasis on educational accountability and limited financial and staff resources, evaluation plays a key role in justifying the effort and resources that are being expended. Documentation of program outcomes also is integral in achieving program support locally, regionally, and nationally. Future evaluation efforts should look more closely at the impact of the PSC on students’ skills, as they were addressed too briefly to really understand the impact of the PSC on these skills. Future evaluation efforts might include performance measures of these skills to better assess program outcomes. In addition, it is important to include a control group in other aspects of future evaluations, as the control group is necessary for attributing outcomes to the PSC.

In addition, this evaluation suggests areas for further exploration or research:

- **Characteristics of successful partnerships** – Stakeholders collectively agreed the PSC is an example of a successful partnership. Future evaluation of the PSC could incorporate a more systematic look into what makes this partnership work. This is a key piece for program replication.

- **Teacher qualifications** – Stakeholders agreed some of the program success could be attributed to the PSC teacher. It would be useful to know what teacher characteristics contributed to this success, as it could help prepare other teachers to instruct in these nontraditional settings, which is another key piece for program replication.

**Conclusion**
The results of this evaluation suggest at least some concept attainment and skill development in science, writing, and possibly math; perceived growth in problem solving and technology skills and skills in working and communicating with others; and positive influences on students’ motivation toward learning, attitudes toward the prairie wetlands environment, and stewardship ethic. While these findings are not conclusive, they are consistent with research on other educational programs that use the environment as an integrating context for multiple subject areas and as a source of real world learning experiences. Further, both ISD 544 and USFWS believe the PSC is furthering their respective missions and goals in a meaningful, quality way. Given these findings, continuation of this program by the USFWS and ISD 544, coupled with further evaluation, is appropriate.

A lingering question is the relationship between the PSC and interpretation. The affective outcomes of this study, attitudes toward the prairie wetlands environment and the sense of stewardship, overlap with interpretation’s efforts toward fostering personal connections with natural and cultural resources and efforts in support of resource stewardship. Interpretive sites often struggle with meeting the needs of schools, given today’s emphasis on educational standards and testing. Implementation of the PSC required a teacher who was willing to think differently about teaching and learning, one who was willing to invest time and energy into a nontraditional teaching approach. Interpreters also may find it useful
to step out of their comfort zone, looking for new ways of applying the concepts of relevance, inspiration, and provocation to better meet the needs of the formal education setting. Through a willingness to think differently about their programs and service, the field of interpretation may find communication efforts are just as relevant to school children as to they are to the summer park visitor.

Works Cited


A Shared History?
Presenting Australia’s Post-Contact Indigenous Past

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Abstract
The colonial origins of museums have often influenced the ways in which they depict the past. In Australia, portrayals of the Indigenous past have focussed exclusively on “traditional life” or the prehistoric period of history, to the detriment of post-contact history. This paper examines ways in which museums around Australia are beginning to counter this trend. Museum exhibits that relate to Australia’s shared, post-contact past are analyzed in the context of recent developments in museology. This analysis is combined with feedback generated from interviews with heritage professionals. The results suggest that in order to move towards inclusive interpretation of Australian history, multiple voices and perspectives of the past must be incorporated into interpretive programs. This paper argues that there are a variety of ways in which heritage interpreters can attempt to incorporate pluralist perspectives of the past into museum exhibits.

Keywords
shared history, museums, Indigenous history, Australian history, inclusiveness, exhibit design, pluralist approaches

Introduction and Methods
The colonial origins of museums have often influenced the way in which they depict the past. Simpson (2001) argues that in the past museum exhibits, in partnership with disciplines like anthropology, were often based on an underlying assumption of western superiority. As this paper shows, Australian museums have not been exempted from these trends. Simpson (2001) suggests that museums created a form of colonialism that continues today with museums acting as the primary agent for “the representation of Aboriginal arts and culture” (p. 1). However,
Simpson (2001) goes on to write that museums are beginning to challenge their colonial past, “undergoing a radical change in the way that they function and in their relationships with the cultures represented in collections” (p. 1). Conferences such as the one held in Ottawa in November, 1988, “Preserving Our Heritage: A Working Conference for Museums and First Peoples,” are helping to encourage discussion of the integration of Indigenous peoples’ perspectives on the content and philosophy of museum exhibits, and on issues such as ownership of cultural materials and intellectual property rights (Simpson, 2001, p. 1). Exhibits are, therefore, evolving from illustrating non-indigenous perspectives of the Indigenous past, to reveal the perspectives of Indigenous people themselves.

Simpson’s (2001) research uses case studies from Europe, North America, Australia, and New Zealand to illustrate how museums are evolving to include Indigenous perspectives. This paper takes a similar approach, examining a range of museums in order to assess their approach to interpreting Australia’s shared past. However, whilst Simpson (2001) analyzed individual museums on a case-by-case basis, this paper examines how a range of museums use methods such as thematic or conceptual approaches to the past, audio-visual displays, and even the museum’s architecture to illustrate Australia’s shared past. This paper also differs from Simpson’s work in that it does not focus on issues such as the repatriation of human remains and cultural artifacts, or the tension between scientific explanations of the Indigenous past versus explanation through cultural beliefs. The focus of this paper is on the presentation of post-contact Aboriginal history and heritage, in order that shared contemporary historical narratives for Australia may be established. This is not to say there is no value in discussions about issues such as the repatriation of cultural materials. It is necessary for society to engage with these arguments; however, by focusing solely on these issues the stereotypical perspective of what constitutes Aboriginal history in Australia tends to be reinforced. Museums are too often and too easily depicted as being the storehouse of Aboriginal prehistory. That depiction overlooks more recent Indigenous history, and it ignores the roles and stories of Aboriginal people in the development of the Australian nation. This study, therefore, focuses on the contemporary past (defined for the purposes of this paper as post-contact history), leaving an engagement with issues such as repatriation to other forums.

This paper is firmly based in the concept of “shared history” for approaching the post-contact past in Australia, history that includes both Indigenous and non-indigenous perspectives of Australia’s post-contact past. This concept reflects a philosophy of inclusiveness, which allows multiple voices (also labeled a “pluralist approach”) both from and about the past to be heard. It is a similar ideal as put forward by Simpson in her introductory chapter that museums can be “authoritative without being definitive” (Simpson, 2001, p. 5). That is, a strict factual account of the past that appears to be set in concrete can make way for more personal interpretations, allowing for the dissemination of multiple perspectives and changing opinions over time. When dealing with Australia’s shared post-contact past, museums need to acknowledge multiple perspectives and avoid the notion of there being only one “true” interpretation of the past. Rather, there will be many perspectives of different events given the diversity of the Australian nation.

It is important to note that the interpretation of “shared history” is a relatively new phenomenon in Australia (Lawton, 2001). Indeed, the term really only came into the public domain with the Council for Aboriginal Reconciliation’s publication of “Sharing History,” on which I draw in this paper. Further discussion can be found in Batten’s publication “Museums and the Indigenous Past.”
which tried to encourage a shared Indigenous and non-indigenous perspective of the past (Clark, 1994). Whilst historians have, for some time, been engaged in re-writing the Australian past to include both the role of Indigenous people in the formation of the nation and Indigenous perspectives on the past, these histories have been slow to filter into the interpretation of museums and other sites of heritage. Australian heritage sites in general rarely reflect a shared past, but rather focus either on the Indigenous or the non-indigenous past exclusively. The Australian past is treated as though there was a period of Indigenous history that was simply superseded by non-indigenous history at the time of colonization. This approach fails to acknowledge the complex integration of cultures that has occurred since 1788 (the year in which the “First Fleet” of convicts came to Sydney, Australia) (Lawton, 2001). Potential interviewees for this study were therefore limited, in that there are relatively few institutions, historic sites, or heritage sites actively trying to create interpretive projects utilizing the concept of “shared history.” Those interviewees whose comments have been included, have personally been involved in establishing interpretive projects to convey Australia’s shared past and are aware of some of the problems and issues in establishing such interpretive projects.

This paper utilizes a dual approach of integrating primary and secondary data. The primary data was generated from personal observations made when visiting the example museums (the Museum of Sydney, the National Museum of Australia, the Melbourne Museum, and the Johnny Mullagh Museum and Cricket Centre) in 2002 and 2003. One of the strengths of this analysis is that it is simple and direct. Further, the experience of the researcher is similar to that of a general visitor, and so there is an authenticity of experience. A weakness of this method, however, is that it is removed from the creative process behind the establishment of museum exhibits. To remedy this situation, secondary data has also been integrated into the paper. This data includes studies of Australian museums such as those of Simpson (2001) and Zeppel (1999), along with official documents such as the “Review of the National Museum of Australia” (Commonwealth of Australia, 2003) and the “Museums in Australia 1975” report (Committee of Inquiry into Museums and National Collections, 1975).

Some interview-based primary data is also used in this paper. This data is drawn from a wider study for a doctoral thesis on the presentation of Australia’s shared past, not only at museums, but at a sampling of historic sites and monuments throughout Australia. For the wider doctoral study, a total of 15 in-depth interviews were carried out with some of the key ‘pioneers’ of the interpretation of “shared history” in Australia. This paper is firmly grounded in the ideas stimulated by these interviews; its focus on museums and its length, however, preclude extensive quotation from that data. Feedback generated from two interviews with heritage professionals in Australia is accessed. These professionals were selected because of their direct experience in the interpretation of “shared history.” Where interviewees are quoted, they remain deidentified for confidentiality; they have been allotted a number instead.

The first section of the body of this paper examines the role of thematic or conceptual approaches for structuring the interpretation of the shared past at a range of Australian museums. The following sections analyze uses of audio-visual displays and architecture respectively in shaping interpretation of history and heritage. Finally, a conclusions section overviews these approaches for integrating shared approaches to the past into interpretive programs.
The Role of Thematic or Conceptual Approaches in the Interpretation of the Shared Past

One of the key features of the museums researched for this paper was the dominance of thematic or conceptual approaches to Australia’s shared Indigenous and non-indigenous past. That is, the museums did not use methods of organization such as chronology to frame their interpretation of the past, but rather used a series of themes or concepts to help structure their exhibits.

The Museum of Sydney, for example, utilizes the conceptual device of layers to stress that the site and indeed Sydney itself have a history that involves many different people from many different cultural backgrounds (Historic Houses Trust, 2003a). In this sense, the museum is attempting to cover the complexity of Sydney’s shared history, where the Indigenous people of Sydney are simply one of the layers that are woven into interpretation at the site.

Hinkson (2001, p. 15) writes that the Museum of Sydney “stands as a powerful symbol of the contested nature of Australia’s history” and that the exhibits there “offer a sensitive and unique interpretation” of history. In contrast, Zeppel’s (1999) response to the museum is that it presents “fragmented impressions of Aboriginal responses to British settlement at Sydney Cove” and that “Aboriginal associations with the site of First Government House are not clearly acknowledged or explained” (p. 187). Clearly these are two very different opinions. Interestingly, when questioned about sites that they believed effectively illustrated shared history, interviewees for this research both praised and criticized the exhibits at the Museum of Sydney for their thematic approach.

Interviewee 1 felt the museum was particularly effective at acknowledging the existence of the multiple layers of history—it was why she “loved it”—yet she acknowledged that “so many people hate it” (Interviewee 1, personal communication, 2002). One of the problems she felt was that the museum fails to tie all the “bits and pieces” into a cohesive narrative for the visitor to come away with (Interviewee 1, personal communication, 2002). “I go in there—I mean I felt a little bit that way at the National Museum. You walk in and you think ‘wow there’s so much here’ but I came away with no sense of a narrative or anything that’s contained and pulling together the bits and pieces, which really upsets me because I do like [it]—there has to be a way of doing it well I think” (Interviewee 1, personal communication, 2002). Two possible responses to this lack of cohesion are motivation and frustration. The absence of a cohesive message above the multiple layers of interpretation at the Museum of Sydney can stimulate a visitor to create his own framework for the perspectives of history he is presented with. Or a visitor may walk away confused and dissatisfied.

In contrast to the Museum of Sydney, the Melbourne Museum has a much more structured thematic approach to its presentation of the past, formally announcing its thematic divisions to avoid confusion. The museum has a dedicated gallery, called Bunjilaka, dealing with Aboriginal history and culture. Within this gallery, there are three main sections. The first titled “Koori Voices,” particularly focuses on the history of Victorian Aboriginal people—engaging with the recent past by investigating subjects such as “cultural encounters, colonization, political struggles, and community histories” and consistently emphasizing “the survival of Victorian Aboriginal people” (Sculthorpe, 2001, p. 77). The second section titled “Belonging to Country,” emphasizes Indigenous links to the land—a continuing aspect of Aboriginal culture. The third section, “Two Laws,” tries to highlight some of the differences between Indigenous and non-indigenous cultures. Rather than chronologically tracing the Indigenous past, key moments in Victorian Aboriginal history are utilized as examples.
to emphasize these different themes. As a result, the gallery does not provide a complete, chronological view of Victoria’s Indigenous past to the present day. It does, however, provide the visitor with memorable contexts, and with a memorable framework with which to view specific events, shining light on the importance and significance of these moments to Victoria’s Indigenous people.

The National Museum of Australia (NMA), which opened in 2001, was established as a result of the Pigott Report (Committee of Inquiry into Museums and National Collections, 1975). The report was officially titled “Museums in Australia 1975: Report of the Committee of Inquiry on Museums and National Collections including the report of the Planning Committee on the Gallery of Aboriginal Australia” (Pigott was the Chairman of the committee). It outlined in Section 12 the need to establish a national museum, the focus of which would be on Australian history. In reviewing the state of museums across Australia, the Pigott Report (1975) was able to analyze not only the types of museums that dominated Australia at the time but also the philosophies that underpinned them, philosophies that influenced both their design and foundation. The report stated that “the major museums which were created in Australia in the 19th century tended to divorce Aboriginal man from European man … The achievements of Aboriginal society over 40,000 years were minimized… Accordingly, many of the factors which molded the human history of both black and white settlers were neglected” (Committee of Inquiry into Museums and National Collections, 1975, p. 70). Clearly, the NMA, as designated in the 1975 report, would be a museum that would challenge traditional ways of thinking about museology in Australia.

The Pigott report recommended the museum take on board the three major themes or topics that the NMA utilizes today: land, people, and nature (Committee of Inquiry into Museums and National Collections, 1975). This approach has been the subject of criticism from some commentators. Windschuttle, for example, criticizes the thematic approach of the museum, stating that by abandoning a traditional chronological approach to the presentation of the past, history “loses its explanatory power and degenerates into a tasteless blamange” (Windschuttle, 2001, p. 16). This thematic approach was also criticized in a review of the NMA conducted in 2003, with comments such as “the risk here is of presenting an assembly of ill-coordinated fragments, merely serving to confuse the visitor” (Commonwealth of Australia, 2003, p. 7).

The thematic approach of the NMA is essentially a presentation of a variety of topics and issues to the visitor. The visitor does not need to journey through the museum starting at the beginning of Australian history, working through to the present, viewing the whole museum to gain an understanding of the past. Rather, the visitor is continually presented with “snapshot” moments from the Australian past presented in a thematic context. Thus a visitor can approach any section of the museum and find that the historical episode that is presented is linked to a broad conceptual understanding of the Australian past (the continuing role and interpretation of land, people, and nature throughout the Australian past). Further, this thematic approach is mutually supportive of multiple perspectives of events in the Australian past. As is discussed further in following paragraphs, the snapshot approach contrasts to grand narratives of history, where experts and dominant perspectives officiate. The immediate relevance of dominant narratives is diminished with snapshot moments, allowing multiple perspectives to germinate and grow. A state of interpretive pluralism in turn encourages the use of snapshot moments, because it allows for the inclusion of the stories of “everyman” as opposed to just those of “greatmen.”
The basic philosophy underpinning this conceptual approach of disseminating multiple perspectives of the past was also criticized in the 2003 review. In a submission to the review, Professor Graeme Davison encapsulated the stance of both the NMA and new museology well when he wrote that “interpretative pluralism is the only viable philosophy in the current Australian climate” (Commonwealth of Australia, 2003, p. 8). Davison worked from a starting base that society is by nature plural and, therefore, it is necessary to acknowledge the different views that will arise. The panel disagreed, stating that “while this view is forceful, the panel is inclined to read more of a consensus than plurality at the core of national collective conscience.” (Commonwealth of Australia, 2003, p. 8). It is this fundamental difference in their philosophical approach to both the NMA and museology that is at the heart of criticisms of various displays, and indeed is arguably the root cause of such phenomenon as the “history wars” (for further discussion see Macintyre, 2003) and “black arm band” debates (debates over the interpretation of the treatment of Indigenous people in Australia’s past).

How both individuals and groups perceive history becomes crucial. By assuming that there is a collective conscience, the panel could criticize displays that it felt depicted the view of one particular cultural or political group as not being “in step” with a collective national identity as perhaps too left wing, too right wing, or even too pro-Indigenous, at the expense of “the majority.” Those who approached the displays of the NMA with the viewpoint that they would not necessarily reflect one consensus, but aim to show the entanglement of lives from various social backgrounds, and the differing interpretations that would arise from this entanglement, would not perceive the “pockets of bias” that the Review indicated existed at the NMA (as raised by Commonwealth of Australia, 2003, p. 67).

Given this fundamental difference in their philosophical standing point, it is amazing that the 2003 review was largely praise worthy of the NMA. In response to Davison’s philosophy of “interpretative pluralism” the panel did state that “the difference between the Panel’s view and Professor Davison’s is one of emphasis, and will not lead us to apply a notably different series of judgement in reviewing the NMA” (Commonwealth of Australia, 2003, p. 8). On the whole, the panel does seem to have been able to tolerate examples of this philosophical approach within the NMA. Where they have not been able to tolerate it is in areas that could be labeled as Australia’s traditional national mythology, stories that have often been used to create a single narrative approach to the Australian past. These include references to Captain Cook, convicts, and explorers such as Burke and Wills. For example, the panel criticized the entrance to the Horizon’s Gallery because of its approach to Cook. It stated that a reference at the opening of the gallery to Disaster Bay created the risk of “insinuation of the subtext that European arrival was a disaster for the continent. This is an inappropriate opening message in the gallery” (Commonwealth of Australia, 2003, p. 23). To suggest that the reference to Disaster Bay would imply to the visitor that Cook’s arrival was a disaster is stretching the criticism too far, Disaster Bay being appropriately named for the number of fatal shipwrecks that occurred in the area. The gallery was also criticized for incorporating the words *Terra Nullius* in the Cook display (*Terra Nullius* referring to a legal concept that the Australian nation was founded upon, which essentially can be translated as a land owned by no one, and which represent a denial of Aboriginal land rights. The validity of this concept was overturned with the 1992 Mabo decision). Adding the words *Terra Nullius* can simply be seen as an example of Tilden’s (1977) theory of provocation; the visitor is free to accept or reject the perspective. Further, the implication of the argument of the review,
that if such an interpretive device be included, it should be relegated to a section on Aboriginal history, is anathema to the principle of shared history. The implication is that a discussion of Indigenous-related issues is not sufficiently relevant to all Australians to warrant its appearance in a general exhibition. This paper argues that the discussion of Terra Nullius, for example, is a part of the shared historical landscape of all Australians.

The NMA is an example of a social history museum genuinely attempting to present Australia’s shared past in a thematic manner that allows debate and discussion. The displays are not problem-free; given the museum’s relatively short existence (the physical displays of the museum have only been in operation since 2002), it has done a remarkable job of presenting differing perspectives of the past, though. The professional association Museums Australia was particularly welcoming of the 2003 review’s acknowledgement that museums do need to “confront ‘darker historical episodes’ so that ‘collective self accounting’ may occur, and its acknowledgment of the need to incorporate the ‘mosaic of everyday life and its more ordinary stories.’” However, it too acknowledged that the “proposed re-working of the post-contact galleries... presents a challenge” (Museums Australia, 2003, para. 5). This challenge comes in the form of the new museology—a museology which allows for multiple, and often open-ended perspectives. As Carol Scott, president of Museums Australia stated, “Current museological practice presents issues in an open-ended way rather than celebrating the past people and events as closed narratives. The challenge will be to produce engaging exhibitions which balance these issues” (Museums Australia, 2003, para. 5). The new museology is designed for a plural society. As Macintyre (2003) writes, “The new museology, with its emphasis on selection, interpretation and display, serves this attempt to recognize diversity and create a conversation that its component communities can share” (pp. 201-202).

Chronological approaches have strengths and weaknesses too. For example, chronological approaches are able to present full and detailed accounts of the past. They can, however, leave a visitor feeling bombarded with historical knowledge. A thematic approach, in contrast, provides visitors with a framework from which they can “hang” their experiences of museums off. It also easily enables museums to establish a set of goals or objectives that they may want to achieve within the gallery. In the case of the Bunjilaka Gallery at the Melbourne Museum, Museum Victoria established the objectives of “improving recognition of contemporary Indigenous cultures, enhancing awareness of Indigenous peoples’ right to self determination, and improving understanding of Indigenous knowledge systems and intellectual property rights” (Sculthorpe, 2001, p. 77). These objectives are not “preached” at the visitor, but are integrated within the displays in a way that provokes thought on the issues. For example, a glass display cabinet that contains traditional objects and artifacts (thus serving to educate about traditional culture) also challenges the visitor to think about the ownership of these objects, and the ethics of display, and who should be responsible for the telling of Indigenous stories. It is able to do this through the following quote that is printed on the outside of the glass: “We do not choose to be enshrined in a glass case, with our story told by an alien institution which has appointed itself as an ambassador for our culture. —Tasmanian Aboriginal Centre 1997” (Display Cabinet, Bunjilaka Gallery). Further interpretation is given on these important issues within the glass.

Importantly, the visitor is not directed to a set perspective, but encouraged to confront the questions asked by the display and to come up with his own conclusions. Under the topic of “Hunters and Collectors,” the following background is given and sev-
eral issues raised: “Modern Museums have their origins in the 19th century… Objects were collected and stories told about the past. In Australia at that time, the stories told of the superiority of Europeans over Indigenous Australians, who were usually thought of as ‘primitive’. As collections grew, the stories changed, as did many old ideas. Who does own the past in Australia? Who owns the objects here? Whose stories have they told?” (Display Cabinet, Bunjilaka Gallery). These are complex questions, with many possible answers. When combined with the perspective from the Tasmanian Aboriginal Centre above, they provide an interesting debate. Conflicting opinions, like this act of displaying objects whilst commenting on whether this is, in fact, an appropriate thing to do, are juxtaposed throughout the Bunjilaka Gallery, effectively provoking debate on the ways in which we interpret the past.

The more traditional aspects of Aboriginal culture and references from the prehistoric past are also continuously juxtaposed with references to contemporary cultural practices and the recent past in the Bunjilaka Gallery. This not only highlights how cultural practices have been retained or have evolved over time, but also helps to place Aboriginal society firmly in the present, providing a tool to illustrate the social impacts of policies from the past on Aboriginal people in Victoria and throughout Australia. One of the most successful juxtapositions is the positioning side by side of a bark canoe traditionally used for burials in the Murray River region and a “hearse used by the Aboriginal Funeral Fund in the 1970s and 1980s to take people back to country for burials” (Sculthorpe, 2001, p. 78). Sculthorpe sites this example as designed to illustrate the continuity of Aboriginal traditions, showing the continuing, yet evolving importance of funerary rights and practices to Aboriginal people. The hearse also provides a subtle commentary, without any direct interpretation, on the high death rate and poor health conditions, not only in the 1970s and 80s but in many Aboriginal communities today.

The Johnny Mullagh Museum and Cricket Centre (JMMCC) in Harrow, Victoria is a small and yet impressive museum, run without the budgets of the NMA, the Melbourne Museum or the Museum of Sydney. The JMMCC is an excellent example, though, of how a museum can tell multiple stories simultaneously. This is achieved simply yet effectively through its signage. From the entrance of the museum the various signs establish a pluralist approach to the past, placing Harrow from the very beginning as a town with multiple stories. The story of Johnny Mullagh is set out as the focal point of the museum. The telling of stories about other Aboriginal cricketers, about the town of Harrow, and indeed about Australia and England, are juxtaposed with Johnny Mullagh’s story, because the life and exploits of Johnny Mullagh are illustrative of and link to important aspects of Australia’s shared history, and also because the other stories help to shape various perspectives on that man’s life. The JMMCC uses a conceptual approach, where signs and the objects that they may refer to, are placed in theme areas in the museum (such as traditional life, life in regional Victoria, the ship journey, and the cricket tour of England). In part, these themes have chronological underpinnings, but generally the snapshot approach, as per the Melbourne Museum, is prevalent.

Irrespective of whether a museum uses a predominantly thematic, a thematic with some chronological underpinnings, or even a predominantly chronological approach, it is important that multiple perspectives are encouraged. The nature of museology is adapting to the contemporary world, and these adaptations are not only welcome but necessary for Australian society to portray its social history in an integrative and inclusive way. Just as his-
torians are continually revising their ideas on the past, so too is it necessary for interpreters to re-examine the past. It is useful, therefore, that museums show that there is no one definitive way of looking at history, and, like the JMMCC, that different interpretations of the one area are possible.

The Use of Audio-Visual Techniques to Illustrate Australia’s Shared History

All the museums reviewed for this study used a variety of audio-visual techniques as a part of their exhibits. These techniques did not dominate the interpretive programs, but rather complemented or supplemented them. In general, audio-visual techniques were not designed to give an overall interpretive experience of the history the museums were presenting, but rather to add meaning to existing interpretive displays by using devices like role plays of historical figures from the relevant time.

At the Museum of Sydney, for example, an installation in the museum’s forecourt titled “Edge of the Trees,” is a series of 29 columns that “represent the 29 Aboriginal clans who originally inhabited the area” (Salvestro, 2002). This installation also incorporates a soundscape featuring sounds of the Eora’s (Sydney Aboriginal people’s) language, in order to further the interpretive experience. The use of audio devices to extend the interpretation of the past is continued elsewhere in the museum. For example, when entering the museum, there is a dramatized dialogue between an Eora woman and the First Fleeter Lieutenant Dawes. This helps reinforce the major theme of the museum—the meeting of cultures—right from the outset. It illustrates the misunderstandings that occurred between Indigenous and non-indigenous cultures in the early days of the First Fleet’s arrival—misunderstandings that continue to influence the relationships between these two cultures to the present day.

Indeed, unlike the other museums reviewed for this study, the Museum of Sydney predominately uses audio-visual techniques (as opposed to other methods of interpretation such as guided tours, signage, public art, and performance, amongst others) to display the shared past. The museum has a separate room which deals exclusively with Aboriginal history. Aboriginal history is also incorporated into the rest of the museum, particularly for contrasting non-indigenous and Indigenous experiences of Sydney’s past; Here, the Aboriginal history is generally presented in an audio-visual form. Zeppel (1999) states that “The Eora Aboriginal exhibits are located in various areas of the museum, in the external plaza, foyer, level 2, and level 3”; however, the majority of these “exhibits” are audio-visual “snippets” (p. 184). They are useful in reinforcing the idea to visitors that Aboriginal people would have had different historical perspectives compared to those non-indigenous perspectives that are dealt with extensively through signage and displays. The nature of these audio-visual presentations, that is that they are quick-grab pieces, means that they are unable to deal in-depth with the complexity of Indigenous perspectives. This has lead to what Zeppel (1999) has identified as a lack of specific information about known Indigenous historical figures such as Bennelong and Pemulwuy in the museum exhibits. This is disappointing as both these figures have a rich history and their stories could contribute positively to a well rounded interpretation of the Aboriginal history of both the First Government House site and the wider Sydney area.

Interviewee 2 (personal communication, 2002) felt that focusing the Indigenous history into soundscapes in particular was a weakness. “People just don’t hang around. I mean I’ve been in the Museum of Sydney and they have the voices going and people just basically pass...
through the area” (Interviewee 2, personal communication, 2002). Consideration should be
given in interpretive displays utilizing audio-visual techniques as to appropriate lengths for
pieces, and also the advantages and disadvantages of a continual loop format as opposed to
audio-visual pieces which are triggered to start by the visitor.

An Aboriginal visitor services officer provides guided talks on the Eora exhibits at
the Museum of Sydney, in order to counter the fact that “the current Eora exhibits are
dispersed and based largely on debates or images, [and that] this Aboriginal history is
not clearly understood by the majority of visitors [and provides] a limited understanding
of Aboriginal viewpoints” (Zeppel, 1999, p. 184). Whilst face-to-face interpretation such
as this can effectively enrich an interpretive experience for visitors – imparting informa-
tion that is not incorporated in exhibits—it fails to target all visitors entering the muse-
um. Some visitors prefer to wander on their own and those who would prefer a guide,
may not always find one available.

Audio-visual technology is also used within the Bunjilaka Gallery at the Melbourne
Museum. It is used there to confront visitors with conflicting interpretations of the past. The
use of audio-visual technology at the Bunjilaka Gallery is, however, more supplementary
than that of the Museum of Sydney. One such example takes the form of a television news
bulletin playing in one corner of the gallery. Aboriginal news readers present perspectives of
the past around the time of European arrival in Australia. This is a particularly useful tool
for non-indigenous people to be able to empathize with the experiences of Aboriginal peo-
ple at the time of European occupation. Additionally, Indigenous people would probably
find the presentations quite humorous.

The bulletins are also able to integrate artifacts to show how they can help us interpret
the past. For example, one presenter, discussing the treatment of Aboriginal people in the
Kimberley Region of Western Australia, used a background clip of carved boab nuts depict-
ing chained Aboriginal prisoners. Traditionally, boab nuts were carved with animals and
other traditional designs, but the carving practices evolved to reflect these new experiences
Aboriginal people were faced with. The headline of this news clip, therefore, focused on the
changing cultural practices brought on by the newcomers to the shore.

Another example further on in the gallery juxtaposes Indigenous and non-indigenous
perspectives of the past through the dramatization of of two historical figures speaking side-
by-side on video screens. The figures were Baldwin Spencer, a non-indigenous man living in
Alice Springs in the 1900s, and Irrapmwe, an Aboriginal man also from Alice Springs at that
time (Sculthorpe, 2001). Signage at the display states that “the dialogue imagines how these
two men might view Aboriginal knowledge, law, and property if they were alive today”
(Display Cabinet, Bunjilaka Gallery). The display is in the spirit of reconciliation and shows
how perspectives on the past can change over time. Baldwin Spencer starts out the dialogue
holding onto his old views, and through conversing with Irrapmwe he gradually changes his
understanding of the past and how he approaches Irrapmwe.

Audio-visual techniques can be a valuable supplementary tool for interpreting the
shared past. In all the museums studied as part of this research, audio-visual displays
played a valuable role in presenting a “lived experience” of the shared past. That is, dis-
plays such as those at the Bunjilaka Gallery showing dramatized dialogues with historical
figures, or even the sounds of the Eora’s language in the Edge of the Trees installation,
help bring to life the reality of a shared past. Interpreters should be aware, though, of
some of the potential problems of using audio-visual techniques, such as ensuring that
the length of audio-visual loops is appropriate so that visitors are happy to pause and engage with the content they deliver. Importantly, because most audio-visual displays in a museum environment are “quick-grab pieces,” they should not be used as the exclusive method of incorporating Indigenous perspectives of the past. The exclusive use of audio-visual displays to tell the Indigenous story has the potential to lead to a simplistic, cursory understanding of the shared past which fails to engage with the complexity of the entanglements between Indigenous and non-Indigenous Australians since colonization. As a supplementary tool, audio-visual displays can be valuable. As the main or sole technique utilized to present the shared past, caution should be used.

The Role of the Museum Building – Architecture, Space, and Installation

The Museum of Sydney, the National Museum of Australia, the Melbourne Museum, and the Johnny Mullagh Museum and Cricket Centre are all museums that utilize the physical structure of their buildings and spaces of their galleries to help achieve the distribution of shared history. Using the museum building or forecourt to strengthen the interpretation of the past is indicative of the fact that museums need not simply be the storehouses of history, but can represent history in themselves. What is more, utilizing a museum’s architecture can help illustrate that the history it reveals is not just a European history of Australia, but a shared Indigenous and non-Indigenous past.

The Museum of Sydney is a relatively new museum, having opened in 1995 (Historic Houses Trust, 2003a). Run by the Historic Houses Trust, the museum is unique in that it is both a museum and historic site; it is built on the site of the First Government House, and it includes some of the foundations and archaeological relics of that building in the museum’s construction. In this sense, the museum’s architecture highlights the non-Indigenous past, visually incorporating typical early Sydney architecture. The museum counters the potential dominance of the non-Indigenous past by incorporating the large installation of public art, “Edge of the Trees,” in the public forecourt at its entrance.

“Edge of the Trees” was created jointly by an Indigenous artist (Fiona Foley) and a non-Indigenous artist (Janet Laurence) (Historic Houses Trust, 2003b). The work is believed to be “the first public artwork in Sydney to be a collaboration between a European and an Aboriginal Australian” (Historic Houses Trust, 2003a, para. 4). As stated previously, the series of 29 poles is designed to represent the 29 Aboriginal clans of the Sydney area. The installation also represents other memories of the site, including the arrival of the First Fleet (Australia’s first non-Indigenous settlers), and the meeting of cultures. The pillars are quite tall, and many are inscribed with names and words of either those who came with the First Fleet or of Eora people (Indigenous people of the Sydney area).

The Edge of the Trees sculpture is given this name because of the “poetic words of historian Rhys Jones” (Dysart, 2000, p. 1). He described the scene he envisioned when the Aborigines observed from the security of the bush the coming ashore of members of the First Fleet. Jones’ words were designed to show more than a desire of the Aborigines to hide from the newcomers; rather he tried to illustrate two different ways of relating to the same piece of land. After stating the Aborigines looked on “from the edge of the trees” Jones goes on to state “Thus, the same landscape perceived as alien, hostile or having no coherent form [for the non-Indigenous newcomers], was to the Indigenous people their home, a familiar place, the inspiration of dreams.” (Jones quoted in Dysart, 2000, p. 6).

The initial concept of the Edge of the Trees sculpture was conceived of by the senior
curator of the Museum of Sydney who wrote a concept brief to define the kinds of messages the final installation was to include. A number of artists were then invited to submit their vision of what the installation could be. The artists chosen by the selection panel were Laurence and Foley. The collaboration of these two artists seemed to represent the spirit of reconciliation, Laurence being a non-indigenous artist and Foley being an Indigenous artist. It is interesting to note, however, that Foley is not an Eora woman, and yet Edge of the Trees sees her, at least in part, representing the history of struggle and relationships to country of the Eora people. This may be controversial to individuals who believe that the most desirable situation is that members from particular language groups should represent themselves. This is particularly the case in representing the Eora, as they are a group who are often wrongfully assumed to have been “wiped out” with colonization and so, therefore, unable to represent themselves. An Indigenous person specifically representing Indigenous people from a different locality than themselves can often become more acceptable by ensuring adequate consultation with the community that they are representing (The Metropolitan Land Council, 2003).

Edge of the Trees is an installation that seems to live up to the original purpose the design brief indicated that it should fulfill at the Museum of Sydney. That is, it creates “the dominant metaphor of place that locates First Government House site as a charged site, historically, culturally, spatially, and emotionally. It was a contested site then; it is a contested site still” (Dysart, 2000, p. 34) The nature of the installation encourages visitors to wander through it, to listen to the voices and touch the poles, engaging with the history that it presents and being confronted with the multiple perspectives of the past that are present at this one site. Through its ability to present “both cultures equally and harmoniously [the sculpture has] become a benchmark for one sort of visual expression of reconciliation” (Kerr in Dysart, 2000, p. 43). As Prosser (quoted in Dysart, 2000) states, Edge of the Trees may have been “the first real attempt to collaborate and make Aboriginal history a part of the whole Australian experience” (p. 97).

Beyond this installation in the museum’s forecourt, the Museum of Sydney uses the spaces within the museum itself to structure its exhibits. The focal point for Indigenous history inside the Museum of Sydney is within a single, small room—the Cadigal room. Initially the museum seems to have taken the approach of integrating Indigenous and non-indigenous perceptions of the past, for example through Edge of the Trees and through an additional soundscape in the entranceway. But largely confining the Indigenous history within the museum proper to one room (with the exception of the audio-visual snippets mentioned in the previous section of this paper) counters this approach. If, for example, a visitor fails to enter the Cadigal Room; they will leave without a meaningful understanding of the Indigenous layers of Sydney’s history.

Similarly, the Bunjilaka Gallery at the Melbourne Museum is contained in a separate gallery. This means that some visitors may choose to bypass that gallery in favor of other sections of the museum. It also tends to categorize Indigenous history as a separate section from general Australian history. Despite this, the Bunjilaka Gallery is an impressive example of how Indigenous history and the shared Australian past can be presented, as discussed above. Further, Indigenous history is effectively integrated into the rest of the Melbourne Museum. Unlike the Museum of Sydney, attempts have been made to be inclusive of Indigenous voices, where relevant, throughout the Museum (rather than confining Indigenous perspectives to brief comments made through audio-
visual displays). This is particularly evident in the upstairs section of the museum in the Australia Gallery.

The opening display of the Australia Gallery, “Windows on Victoria: Eight Moments in Victoria’s History”, selects eight events as snapshots of Victoria’s past. The first exhibit in the display features “black perspectives on black and white cultures and white perspectives on black culture” (Australia Gallery Signage). One response to this is that, from the very start of the gallery, Aboriginal perspectives are seen as one way in which the past can be viewed. The inclusion of Aboriginal perspectives in the display is not forced. When the perspectives are not necessarily relevant, an Indigenous perspective is not included, for example in the third exhibit on the history of railways. In the final exhibit representing the bicentenary, Indigenous perspectives are included, as they are particularly relevant to this celebration of non-Indigenous colonization. References to Aboriginal culture and perspectives are also found in other sections of the Australia Gallery, for example in the section dealing with sport and in particular AFL (Australian Football League). This illustrates a museum that successfully covers Aboriginal history in detail (in the Bunjilaka Gallery) and that includes Aboriginal perspectives in the presentation of the Australian past in general. By ensuring the presence of Indigenous voices throughout the museum’s public spaces, rather than confining Indigenous history to one room, an integrated perspective in the past can be achieved.

The National Museum of Australia (NMA) is particularly strong in using the physical design of its galleries and open spaces to comment on the interpretation of Australian history. The Museums Australia 1975 report (Committee of Inquiry into Museums and National Collections, 1975), which in many ways established the design of the NMA, recommended the museum stress the interactions between man and the environment, and between Indigenous and non-Indigenous Australians, and as such, the committee recommended somehow joining the galleries physically in the building design to represent these interactions (Committee of Inquiry into Museums and National Collections, 1975, p. 71). Today the NMA has taken on board this approach of utilizing the flowing architecture (amongst other attributes) of its structure to comment on the nation’s history in addition to the more traditional museum exhibits and interpretive labels. As Casey (2002) writes, the NMA “tells the nation’s stories through a unique fusion of architecture, landscape design, contemporary exhibition techniques, and live media-based programs” (p. 19).

Indeed, an area of controversy with the NMA is the fact that it utilizes its architecture to comment directly, and somewhat boldly, on the Australian past (rather than merely utilizing architecture to create “flow” between galleries). Two areas in particular where the physical design of the museum is used to comment on Australian social history have been controversial. The first of these is what is referred to as a “footprint” (essentially a section of architecture copied from another building). The footprint used in the design of the NMA was taken from the Jewish Museum in Berlin and replicated within the Gallery of the First Australians by the museum’s architects (National Museum of Australia, 2004b). Some commentators have suggested that this amounts to plagiarism whilst others have suggested that it is a completely valid way for architects to express themselves, similar to quoting a book in an essay. The issue of plagiarism aside however, the use of the footprint has created such controversy largely because it makes a direct link between the experiences of European Jews in World War II to the experiences of Aboriginal Australians. Whether this is a valid comparison is subject to debate. Reed (2002) suggests that “the Gallery of the First Australians is a tough building to house a tough history, and it is arguable that the connection between
the slaughter of Jews in Europe and the near to total eradication of Australia’s Indigenous people is not an unreasonable one to make” (p. 13). Authors such as Keith Windschuttle, a key critical commentator on the NMA, would beg to differ (Windschuttle, 2001). It is important to note in this discussion however, that the majority of visitors to the NMA would not be aware of this architectural reference (indeed it can only really be seen by utilizing either aerial photographs or plans of both buildings). Unless specific literature (such as academic journals or publications dealing with the museum’s architecture) was read prior to visiting the NMA the visitor would be unaware as to the additional interpretation available through an examination of the museum’s architecture.

The second controversial use of architecture is in the field of landscape design or landscape architecture. It is the area of the NMA known as the Garden of Australian Dreams. Essentially, the Garden of Australian Dreams is a central outdoor courtyard (Commonwealth of Australia, 2003). It is not a garden in the traditional sense of the word, filled with various greenery and flowering plants. Rather, the base of the courtyard is a concrete “map of Australia upon which the public can walk and read complex layers of information. It is a richly patterned and written on concrete surface, the size of a small sports oval made to look like a crumpled paper or printed fabric” (Weller, 2002, p. 132). Examples of the layers available for interpretation in the Garden of Australian Dreams area traditional European-style map of Australia, Horton’s map illustrating Aboriginal linguistic boundaries in Australia, representations of fence lines such as the Dingo fence, Explorer’s tracks, and a map of Gallipoli, amongst others. This complexity has been one factor in leading critics to describe it as an “alienating” public space (Kremmer, 2003). The argument here is that the jumble of sometimes “encoded” (Commonwealth of Australia, 2003) references to Australian history and identity is confusing to the visitor, and that without a “brochure in hand or a knowledgeable guide to lead them through the intricacies” (Commonwealth of Australia, 2003) the significance of most of the references and symbols in the garden would not be understood, and at the worst leave the visitor feeling frustrated and confused (p. 37). It is certainly possible that some visitors to the NMA experience these kinds of reactions in response to the Garden of Australian Dreams. It is also entirely possible that a similar proportion of visitors find the complexity of the garden and the range of understandings visitors can formulate when left to their own devices to interpret the surroundings both stimulating and challenging. Perhaps the best solution is to provide a small amount of interpretation to those who wish to access it.

The Johnny Mullagh Museum and Cricket Centre (JMMCC), as introduced above, also utilizes the spaces within its building to structure its interpretation of the past. Officially opened in March 2004, the museum tells the story of the first cricket team from Australia to tour England. This team, entirely made up of Aboriginal players, visited England in 1868. Johnny Mullagh was well known as the “star” of the team and went on to play cricket as a professional, although he never played internationally again. During his career, until the present day, Johnny Mullagh has continually been hailed as the “Hero of Harrow” (Johnny Mullagh Cricket Centre, 2004). The establishment of this museum at Harrow is indicative of the incredibly innovative community that has developed within the town. Harrow is a small rural town in Western Victoria, yet, through the formation of the Harrow Promotion and Development Group, it has developed successful tourism ventures like the Harrow Sound and Light Show (the profits from which helped establish the Johnny Mullagh Cricket Centre), and other events which attract visitors to the town such as the “Beaut Blokes”
weekends, which are designed to help aid rural living singles to find partners (Harrow Promotion and Development Group, n.d.).

The museum is surprisingly both professional and reasonably large for a small rural town. The museum has three main sections: the first representative of Harrow and Victoria, the second representative of the ship, the Parramatta, on which the cricketers travelled to England and the third representative of England. The sections are designed to represent the journey of the cricketers, and indeed, the use of a constructed ship which visitors walk through to divide the sections of Harrow and England tries to convey the physical separation of the two different worlds the cricketers experienced.

A museum can be much more than a storehouse of artifacts. Each of the museums analyzed for this paper have shown that there are a range of ways in which a museum can use the spaces within, or even the overall design of the building itself, to extend its commentary on the history it presents. As an additional means for interpreting the shared past, this may seem a feature for interpreters to consider only when they are involved in constructing a museum from scratch. Internal spaces in museums however, can often be very adaptable, and in institutions where exhibits are changed regularly, thought can easily be given as to how the construction of the spaces within exhibits may also help to create a sense of a shared past.

Conclusions
The museums utilized as examples in this paper illustrate that there are a range of ways in which pluralist or shared approaches to the past can be integrated into interpretive programs. In the case of the four museums analyzed as a part of this research, thematic or conceptual approaches that stress a multi-layered interpretation of the past, utilizing audio-visual displays to provide alternative perspectives of the past and utilizing the architecture and spaces within museum buildings to comment on the shared past, were the dominant methods used to construct shared historical narratives. It is likely however, that there are a range of other methods in use at institutions around the world to present shared Indigenous/non-indigenous perspectives of the past. Research on the presentation of shared history on an international scale would be particularly valuable to explore the many ways nations can help achieve genuine inclusion of minority groups into official historical narratives.

The research presented in this paper is part of a wider study examining the presentation of the shared past in Australia throughout historic and heritage sites, in history museums, and even at monuments and memorials. Analysis of the museums discussed in this paper do highlight, however, a number of the problems interpreters can face in presenting Australia’s shared history, along with some very effective examples of successful illustrations of a shared past. Importantly, the examples used can help in the creation of a number of principles to guide interpreters in their treatment of the shared past, as discussed in the next paragraph.

When interpreting the past, heritage interpreters can benefit from using four guiding principles. Interpretation needs to be inclusive, integrative, interesting and informative (Batten, 2005). Without the principle of inclusiveness, interpretation can never succeed at
presenting a shared past. Without the principle of integration (creating some kind of cohe-
sion in the interpretation of the shared past, for example, in the case of the museums ana-
alyzed in this paper using a thematic or conceptual approach on which to “hang” a multi-lay-
ered interpretation of the past) presenting a shared past can lead to a confusing number of
layers with no framework to help the visitor to absorb them. The final two principles, inter-
esting and informative interpretation, are not unique to the interpretation of the shared
past, but are two principles indisputably necessary for effective interpretation. Combined,
the four create a set of guiding principles for the effective interpretation of the shared past.

It is important for those working in the field of interpretation to avoid treating the
examples cited in this paper as illustrating prescriptive ways in which to interpret the
shared post-contact past. Rather, any examples should be seen as simply stimuli for
interpreters to form their own innovative approaches to presenting the shared past.
Utilizing the four guiding principles of inclusive, integrative, interesting, and informative
interpretation is the best starting point for interpreters working in the field of shared his-
tory. A final key for interesting and effective interpretive programs then is innovation.
Interpreters need to continually think of new ways of presenting the past in order to be
effective. To challenge an audience into thinking about the past in new ways—to help
visitors perceive the concept of a shared past where this has previously been absent from
interpretive programs—requires a certain amount of what Tilden (1977) labeled as
provocation. Using the concept of innovation in tandem with the principles of inclusive,
integrative, interesting, and informative interpretation confronts the visitor with new
and unique ways of illustrating the shared past.

This paper has covered but a smattering of the museums around Australia that incor-
porate, or have the potential to incorporate, aspects of Australia’s shared history. Those that
have been mentioned have been used to highlight three techniques (thematic approaches,
audio-visual displays, and utilizing a museum’s structure and spaces to comment on the
past) that interpreters can use to convey multiple perspectives of the past. Throughout
Australia, museums are gradually beginning to meet the challenges of presenting a shared
past in effective and novel ways. Others still have a way to go if this is to be an end goal.
Lessons can be learned from museums at differing stages of development in this context.
This paper provides an insight into the experiences of four such museums.

Sculthorpe’s 2001 study analyzing the presentation of the Indigenous past in a range
of state museums across Australia states, “The current level of activity in developing
exhibitions relating to Indigenous peoples across Australia is probably the highest ever in
Australian museum history” (p. 74). This has been combined with developments such as
the employment of Indigenous staff and the appointment of Aboriginal advisory com-
mittees (Sculthorpe, 2001). Whether this will amount to an increase in the presentation
of Australia’s shared post-contact past, or merely an increase in presenting “traditional”
Indigenous life or prehistory is yet to be determined. In major institutions such as the
National Museum of Australia, the Museum of Sydney, and the Melbourne Museum,
these impacts are no doubt having a role in the presentation of Australia’s shared past. In
many minor museums however, the concept of “shared history” is still foreign.

Where smaller museums are aware of the philosophy of presenting shared or plu-
ralist approaches to the past, the challenge remains as to how such museums (often run
by volunteers) can establish interpretive programs that are effectively engaging with the
shared Australian past. Certainly, some grants are available, but funds and resources are
limited for smaller institutions. The establishment of the Johnny Mullagh Museum and Cricket Centre does give hope that with the power of innovation and strong motivation, small communities can create museums that relate the shared past in a manner that rivals the larger institutions. With a base philosophy of inclusiveness, in combination with the principles of integrative, interesting, and informative interpretation a lot can be achieved.

References


IN SHORT: REVIEWS AND REPORTS
Long-Term Recollections of an Environmental Interpretive Program

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Introduction
Recent interpretive publications have noted the importance of memory and recall. In discussing cognitive effects of interpretation, Webb (2000) suggests that, “While learning is the input, memory is the output—we assess learning only through memory” (p. 22). Chawla (1998) notes that memory-related research associated with formal and informal events (such as interpretation) can provide rich information. “When it comes to the broad outline of life events and their significance, memory’s reputation fares much better [than other media]” (p. 387). In the textbook, *Interpretation for the 21st Century*, Beck & Cable (1998), suggest that interpreters’ first principle should be to not only relate information to the visitor but also help retain that information. “Effective interpretation produces external stimuli that trigger existing (cognitive) maps, thereby allowing the audience to get it and store the information in relation to other information they already possess” (p. 16). Although the field notes its importance, few studies have been conducted to assess *long-term recollections* of interpretive programs. Therefore, this project investigated aspects of an interpretive program that were recalled two years following the actual experience.

The study utilized interview data gathered from six individuals who participated in an evening environmental interpretive program at an Indiana State Park during the
fall of 1998. The general objective/goals of the program were to make visitors aware of the natural history and life patterns of the white-tailed deer. In particular, the program focused on the animals’ adaptations for survival and their impact on the region’s food web. It included a 30-minute slide presentation, a 15-minute discussion led by the interpreter and a “hands-on” period at the end of the program that enabled participants to touch/feel white-tail deer artifacts. The hour-long program took place inside the park’s nature center.

Two years following the program, the participants were contacted by phone to attempt to secure an interview with them within a week of the initial contact. This served as a way for the subjects to be prepared to participate in the interview which would include attempted recall of the program. The open-ended and unstructured interviews began with the following question: “Could you please tell me what you can recall about the interpretive program that you participated in two years ago at Brown County State Park?” Subsequent statements or questions represented attempts to obtain clarification or elaboration regarding the participants’ experience. Interviews were participant-centered in the sense that they controlled the direction of the interview, including the subject matter and the range of topics discussed. The interviewer’s responses were limited to minimal encouragers, summaries of content, and clarifications. Thus, there was no preplanned agenda of questions to be covered in the interview. Interviews were discontinued when no new materials and themes were forthcoming from the participants. The length of the interviews varied from 30 to 40 minutes.

The raw data were transcribed verbatim for each subject. All data was read in its entirety by both researchers. Significant statements were extracted from each data set that directly pertained to participant recall of the environmental interpretive program. Clusters of data were organized from the statements, which allowed for the emergence of themes common to all the subjects’ descriptions. These clusters of themes were referred back to the original data in order to validate the data.

Four themes emerged from the analysis. Recollections related to (1) visual cues (2) novel experiences (3) interpreter-related actions and (4) active involvement.

Visual Recollections
The participants remembered visual images related specifically to seeing slides of deer. “I remember a slide of…not a nest, but where they bedded down,” and “they took a picture downward so you could see like a mama and a baby together in a, like a bedding type thing.” Another representative response was: “I can see the picture of the deer with his big ears looking at me.”

Novel Recollections
In a second category of recall, participants noted aspects of the program that were novel, unusual, or drew their attention. Antlers and the other “touchable items” were a consistent response related to this theme: “It’s not very often that you get to touch antlers and things like that.”

Interpreter-Related Recollections
Respondents offered vivid responses related to the interpreter. “She [interpreter] was just very good so I think one of the best things of having a good program in a recreational facili-
ty or park is having a good interpreter”. Another response related to the interpreter’s impact on their children:

But I thought it was just really interesting that she [interpreter] was able to keep it entertaining and yet put in scientific information like that without being boring. Where the kids thought, “Oh man, Mom and Dad are dragging us to this boring thing,” and they were not bored in the least.

The interpreter’s use of humor also seemed to be retained by some of the participants, “I think that the interpreter used humor in presenting information. And so that seemed to hold my attention.”

**Active Involvement Recollections**

The richest description of recalled memories related to active involvement. For example, participants recalled a hearing exercise that was conducted that involved all of the program participants cupping their ears to demonstrate hearing adaptations of deer. “I remembered we stood around, we cupped our hands around our ears and turned them around to give the effect of deer listening to different things at different angles.” One participant noted that the activity was used back at their home following the program, “I have a hearing loss in both of my ears. So I use that all the time now! But all of my family still do that sometimes—cup our ears and hear and stuff.”

Another active aspect of the program recalled was the passing around of objects: “They [interviewee’s children] got to hold and see the different antlers and skulls of different deer that has, you know, died and stuff and they were truly excited.”

Two years following an interpretive program, this study found that individuals could recall extensive details of the program they attended. In particular, aspects of the interpreter (including personality traits and teaching techniques) and experiential parts of the program seemed to illicit the most vivid recollections. Although this study was small in scope, it does offer evidence that an environmental interpretive program can produce long-term memories. Further research is recommended with larger populations to learn if these and/or other aspects of interpretive programs can be retained for long periods of time.

**References**


College natural resource programs have a challenge to provide students with a broad background of ecological theory and applied practices while also satisfying general education requirements. The study of natural resources is inherently broad, and our program of Natural Resources and Environmental Sciences at the University of Illinois at Urbana-Champaign struggles to provide this balance to students. Opportunities for students to learn how to employ and apply ecological principles while managing natural resources are essential. However, it is often difficult for programs to provide these opportunities. Shrinking state dollars have resulted in substantial budget cuts, staff reductions, and unfilled faculty positions. Restrictions on the use of funds often make it difficult to fund non-traditional and/or new initiatives. Teaching field-based courses also presents a range of obstacles that inhibit faculty from devising such courses. The development and instruction of field-based courses consumes a disproportionate amount of time that is not always equally considered during tenure review. Instructors of such courses must also possess a unique skill set that differs from traditional classroom instruction. They must possess a mastery of the applied techniques being taught. Logistics such as site procurement and transport of students are time-consuming and often prohibiting, and normal class periods are not long enough to accommodate travel to a site.

Academic programs are not alone in suffering from budget cuts. Both state and federal agencies must also balance shrinking budgets and staff reductions with the demand to increase services in natural resource management and public education. However, the challenges that are faced by academic natural resource programs and state and federal agencies, provide a unique opportunity for partnership. I have recently been involved in an innovative approach in teaching university students while also assisting a national park.

As a co-instructor with an academic background in environmental sociology and policy, I was challenged to provide a learning experience to students participating in a field-based course on the ecology of the mixed-mesophytic
The course provides classroom instruction on the geology and the ecology of the forest types occurring in the mixed-mesophytic forest and culminates with a 10-day field trip to Great Smoky Mountains National Park (GRSM). Through extensive hikes, the students explore different sites within the park to discuss the diversity of flora and fauna and management issues. As management of these systems does not occur in a vacuum, socio-economic issues must also be considered. During past trips, discussions in the field included socio-economic considerations, but no socio-economic methods were taught during the field course. As students learned to sample vegetation, identify species, and estimate timber volume, my desire was to incorporate a hands-on learning exercise in socio-economic methods.

With input and encouragement from the chief of interpretation and education at GRSM, I developed a proposal to introduce our students to social science data-collection methods while also assisting GRSM. Great Smoky Mountains National Park has struggled with its mission of preserving its unique landscapes while also providing for public recreation. This challenge is uniquely illustrated in the Cades Cove area of GRSM. The U.S. National Park Service (NPS) estimates that approximately 2 million people visit Cades Cove annually. Cades Cove is a 6,800-acre valley with 70 historic settler cabins, barns, and churches that have been preserved and maintained to provide a representation of the cultural history of the region. The maintained meadows adjacent to forested areas provide scenic vistas and opportunities for wildlife viewing. Cades Cove is one the best areas within the park for seeing black bears outside of remote areas and trails. As visitation has increased over the past decade, Cades Cove has become over-crowded especially during peak seasons in the summer and autumn. Over-crowding during these times significantly distracts from the visitor experience, strains park facilities, and creates environmental hazards such as concentrated car emissions.

Cades Cove is accessed by a narrow, one-way, 11-mile road that loops through the cove providing access to the Cades Cove Visitor Center and historical buildings. During peak seasons, it is common to experience bumper-to-bumper traffic taking three to four hours to complete the 11-mile loop without stopping to explore sites. In May 2002, NPS began developing The Cades Cove Opportunities Plan. The Opportunities Plan outlines a long-range management vision for Cades Cove designed to enhance the quality of the visitor experience by protecting natural resources, preserving cultural heritage and managing traffic congestion. The planning process has included public involvement in the form of public meetings and public comment periods. However, no large systematic survey of visitors has been done.

I designed a survey to collect visitor input about services and alternative traffic scenarios proposed for Cades Cove. The 27 junior, senior, and graduate students were trained in interview techniques, and on Saturday, May 22, 2004, interviews were conducted with 340 visitors. Although the survey was limited by only one day of data collection during a non-peak season, the results did reveal issues that the NPS might wish to explore in more detail. For example, the survey results suggested that men and women have different desires for services provided at Cades Cove; the elderly feel differently than others about limiting personal vehicles in Cades Cove; and that visitors were generally agreeable to a tram system for travel through the Cove.

This partnership was a win-win situation for all involved. The park gained some valuable information to aid with their planning process, and the students were able to learn and practice hands-on techniques in the field. With only the nominal cost of printing interview
forms, my donated staff time, and free student labor, this was a no-cost way for the park to collect some valuable information. Opportunities like this field course also allow for students to become immersed in nature for an extended period of time. This is increasingly important, as our programs are filled with urban students who have a desire to work in natural resources but have not had the opportunity to really “get their boots dirty” and have a real connection to nature.

References


A 20 Years Overview and Prospect of Graduate Interpretive Research in Taiwan: 1984-2003

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Abstract
The year 2004 represents a landmark for interpretive research in Taiwan—it has been 20 years since the completion of the first academic thesis examining the topic of interpretation in 1984. Fifty-six completed masters’ theses signal a boom in resource interpretation research. Within the past two decades, the scope of interpretive research has expanded from general to specific, from resource-based sites to diverse settings, and from a “service orientation” to “management tool orientation”. This analysis of interpretive research in Taiwan attempts to (1) compare and contrast what research topics related to interpretation and guiding have been conducted on “the other side of the world,” (2) understand the range of theories employed in the studies, (3) recognize how interpretation relates and contributes to the development of the leisure and recreation industry in Taiwan, and (4) highlight the potential long-term cumulative effect of interpretation to Taiwanese society as a whole.

Keywords
interpretive research, evaluation, interpretation, trend, research method, professionalism, Taiwan

Acknowledgements
The authors are grateful to Dr. Sam H. Ham, Department of Conservation Social Sciences, University of Idaho, for his extensive consultation on and critical review of this paper. His
substantial commitments of both time and energy in refining the manuscript are highly appreciated. Special thanks also go to two anonymous reviewers and editor for their constructive comments and suggestions.

The Importance and Needs of Interpretive Research

Research helps explore, examine, or expand our professional knowledge. Ward (2004) mentions the need for sharing information regarding interpretive research among our professional colleagues. Similarly, Ham (2002) states an encouraging trend in interpretive research is that interpreters are beginning to embrace inquiry into themselves and their work. They’ve been slow to do this for many reasons, and their resistance has held back interpretive research in some sectors. According to Ham, “Many interpreters have clung tenaciously to Freeman Tilden’s assertion that they should remain ‘happy amateurs’ content to love their life’s work and to never take themselves too seriously.” In an earlier essay, discussing interpretive trends in Australia, the U.S., and England, Ballantyne and Uzzell (1999) urged interpreters and researchers to advance development and extension of interpretation’s theoretical base “if interpretation is to have a significant impact on society.”

The reverse situation is occurring in Taiwan, where interest in interpretive research has grown at the academic, agency, NGO, and grassroots levels. Courses are developed and taught at most of the leisure, recreation, and tourism departments at universities. Graduate schools that have faculty members specialized in resource interpretation have a long line of applicants waiting to apply and study interpretation. Interpretive services are provided not only at national parks, national forests, national scenic areas, museums, and zoos, but also at many community-run attractions, cultural sites, and ecotourism settings (Lee & Yang, 2000). The breadth and depth of interpretive studies in Taiwan has flourished in the past two decades. Whether it will continue flourishing will depend in part on its ability to diversify theoretically, disciplinarily, and methodologically. This article examines the state of interpretive research in Taiwan along these dimensions and documents its growth and potential new directions.

Method

The purpose of this study was to develop an overview of interpretive research in Taiwan. To systematically identify and collect master’s theses and doctoral dissertation that examine the topic of interpretation, the authors first selected “interpretation” or “guiding” as the primary keywords to search the Dissertation and Thesis Abstract System of Taiwan published from 1984 to 2003. The database is a searchable and well-represented research bank that includes more than 280,000 theses and dissertations completed as early as 1956. The authors then acquired a copy of the full-text theses from the researchers. Categories analyzed included (1) research sites, (2) topic areas, (3) theories applied, and (4) the researchers’ gender and disciplinary backgrounds.

Results

The Dissertation and Thesis Abstract System of Taiwan database yielded 56 masters theses regarding the topics of interpretation or guiding. No doctoral dissertations regarding the above fields emerged from this search. Of the 56 theses examined, six were completed prior to 1989 with the rate of one thesis per year in six consecutive years (Figure 1). A gap indicated that no interpretive studies were completed in 1990 and 1991. However, between 1992
and 1997, universities produced one or more (up to four) theses per year. Starting in 1998, there appears to be a growing interest in interpretive studies where the number of thesis completed increases almost every year.

Research Sites
Taiwanese interpretive research has been conducted primarily in seven types of research locations: national parks, forest recreation areas, scenic areas, historical and heritage sites, zoos, botanical gardens and aquariums, museums, and others across the country. Of the 56 theses examined, more than half reported research conducted in national parks or forest recreation areas (n=27). These studies appeared to choose sites that provide some of the richest recreation opportunities in Taiwan: national parks, forest protected areas, and museums. Among national park sites, studies were conducted to explore, examine, or review the park’s interpretive planning processes and/or programming. In addition, museums where staffs offer regular interpretive talks and demonstrations were the focus of 14 investigations.

Topic Areas
The analysis reports five categories of research topic areas: evaluation and interpretive effectiveness, interpretive services need assessment, interpretive planning, volunteers and docents, and professional development and proficiency. Of the 56 theses examined, the majority evaluated the effectiveness of interpretive programming and/or media from visitors’ standpoints (n=32, 58 percent). Others examined the factors that contribute to a suc-
Successful interpreter \((n=24, 43\text{ percent})\). Among the visitor studies, the majority identified the general public as the focus. Other subjects included high school teachers, college students, elementary school students, and hikers.

*Theories Applied*
A variety of theoretical perspectives were employed within the 56 interpretive theses. For example: Expectancy disconfirmation theory; Clawson & Knetsch’s recreation experience; Importance-Performance analysis; Maslow’s Hierarchy of Needs; Lavery’s recreational demand; the compensatory theory; the theory of relaxation; entertainment and self-development; cognitive vs. affective approaches; sensitive involvement; consumer involvement profile; leisure benefits; significant life experiences; locus of control; SWOT; and competency-based education and training. Conspicuously absent were studies applying the theory of planned behavior or the theory of reasoned action, or other contemporary communication theories, as they are frequently used in the United States and other countries.

*Researchers’ Gender and Disciplinary Backgrounds*
The analysis revealed that while the gender of the researchers was evenly distributed (27 males and 29 females), the majority of the advisors were males \((n=45)\). Female faculty members were absent in the first decade and then started to work with graduate students in 1994.

An analysis of the disciplines of the researchers revealed that they were students in eight types of academic programs. Among the 56 theses, eight studies were conducted by students in environmental education; seven in forestry; seven in tourism management; six in horticulture; three in geography; two each in aesthetic and art education, natural resource management, and science and mathematical education.

*Interpretive Research Trends in Taiwan*
The review and analysis of 56 interpretive studies in Taiwan revealed two apparent trends: (1) the commensurate growth of interpretive services and research opportunities as a response to parallel growth in outdoor recreation opportunities, especially since 1998, and (2) a theoretical blossoming of interpretation research in Taiwan as it gradually diversifies its disciplinary focus into such “parent” disciplines as sociology, psychology, communication, geography, education, and management. International interpretation research projects may be on the rise in Taiwan as more Taiwanese graduate students enter the interpretive research field and begin collaborating with their international advisors and colleagues on future projects.

*Extended Weekends Creates Demand*
One of the most significant social trends in Taiwan in the past five years has been the effect of extended weekends; known as the “Five-Day Workweek” policy (or the “Two-Day-Off” policy) established by Taiwan’s government, the effect of the policy has been tested bi-weekly since 1998 (Department of Transportation, 1998). For the first time in 35 years (1966–2001), parents with children have two consecutive work-free days that allow them to plan and pursue a variety of leisure activities (Department of Transportation, 1999). Increasing interest in traveling to parks and recreation areas has contributed to the rapid development of ecotourism, heritage tourism, museum experiences, nature observation,
whale watching, and environmental education. Studies (e.g., Wu & Huan, 2001) point out the fact that as more visitors travel to parks and recreation areas, interpretation has become increasing popular.

Future Directions
This overview is meant to be a descriptive analysis of interpretation research in Taiwan. The analysis showed growth in the number of graduate-level studies completed since 1998, greater theoretical diversity, and a more extensive disciplinary focus. Thus, the growth and maturation of interpretive research in Taiwan appears to be on a stable course. Nevertheless, a number of steps might be taken to solidify its continued development. Among these are:

- Establishing a comprehensive interpreter development program where a range of volunteer, seasonal, and certified interpreters can acquire the knowledge, abilities, and skills needed to fulfill their career goals and aspirations.
- Developing a mechanism (such as a professional organization or association) where the breath and depth of interpretive research and skills can be discussed and shared.
- Encouraging on-going dialogue between the field of interpretation and other social science disciplines where multi-disciplinary theories can be examined, implemented, and/or incorporated into the practice of interpretation.
- Recognizing the profession and status of “interpreter” as a career by creating an in-take or certification program sanctioned by the central government to recognize qualified interpreters who are already actively engaged in their profession.

In conclusion, interpretation research in Taiwan seems to move toward incorporating theoretical approaches from multiple disciplines while the practical domain of interpretation research is clashed with transplanting the ideas and concepts from the western world. The real challenge for Taiwan is to develop interpretive methodologies, theories, and programs that are consistent with and reflective of its own identity, uniqueness, and cultural background (Wu, 1997).

References


### Appendix 1. Bibliography of interpretive theses in Taiwan (By Year Completed)

Thesis titles may have been slightly modified during the Mandarin-English translation process to retain their spirit and intent. The abstracts of the theses are available online at the [Dissertation and Thesis Abstract System](http://192.192.58.195/theabs/1/eng/).

<table>
<thead>
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<th>Name of Researcher</th>
<th>Year</th>
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<tbody>
<tr>
<td>Ou, S. R.</td>
<td>1984</td>
<td>On providing interpretive services to meet visitor needs: A study of three sites at Kenting Forest Recreation Area, Oluanpi Park, and Mt. Nan-Ren in Kenting National Park.</td>
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<td>Dong, Y. P.</td>
<td>1985</td>
<td>The relationship between resource significance and interpretive media at Kenting National Park.</td>
</tr>
<tr>
<td>Li, C. S.</td>
<td>1986</td>
<td>Interpretation need assessment for national parks in Taiwan.</td>
</tr>
<tr>
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IN MY OPINION
An emerging field of study in the psychological sciences is looking deeper into many areas of human behavior from an evolutionary perspective. This paper explores how the promising field of evolutionary psychology is relevant to the field of interpretation. Research findings from evolutionary psychology may clarify the psychological underpinnings of meaningful connections humans make with some natural and cultural resources. Tilden (1977, p. 8) emphasized that interpretation “aims to reveal meanings and relationships.” Larsen (2001) states, “I believe that embracing the variety of meanings that audiences see in the resources we protect and manage is a critical strategy for preservation” (p.17). The meanings humans find relating to natural and cultural resources are shaped in a variety of ways including cultural, ethnic, and life experiences. It may also be true however, that some elements of natural and cultural resources are meaningful in some ways to all humans as a result of a shared evolutionary history with those resources. Professional interpreters continually seek to link tangible elements (such as structures, artifacts, biofacts, and land features) of a cultural or natural resource with intangible concepts (such as ideas or concepts) that reveal personal meaning. It is believed that the most powerful intangible concepts are universal because they provide the greatest opportunities for individuals among diverse audiences to find meaningful connections with the tangible elements of a resource. Stated differently, it is anticipated that all human beings find certain intangible concepts or ideas meaningful, hence are universal among human populations. Such con-
cepts or ideas might include freedom, birth, death, survival, and family to mention only a few possibilities.

The successful interpreter attempts to include universal concepts in the development of his or her interpretive products in the hope of providing opportunities for the greatest number of consumers. In theory, every consumer will have an opportunity to find personal meaning and value inherent in a target resource. As a result, the consumer of the interpretive product is put on the road to caring for that target resource, perhaps developing a sense of regard for associated resources and ultimately promoting diligent care for the “bigger” resource conservation picture. As the field of interpretation develops into a more measurable and perhaps scientific endeavor, it is increasingly important to improve and develop theories to support concepts employed in the profession. As Larsen (2004) aptly recognizes “…the lack of theory, standards, and language is changing” (p.71). An evolutionary psychological approach to the origin of universal concepts may lend greater understanding and theoretical support to an important component of the profession that can be measured and evaluated. In other words, finding reliable cause-and-effect relationships between what an interpretive product is designed to accomplish and what it actually does accomplish in terms of meaningful connections, thus promoting resource appreciation and diligent care of natural and cultural resources.

Research from an evolutionary psychological perspective can offer the field of interpretation a deeper look into how and why people of different cultural, ethnic and socio-economic backgrounds find meaning in cultural and natural resources. It is seldom known what the backgrounds are of the people that attend interpretive talks, view interpretive exhibits, read interpretive publications, or experience one of many interpretive program delivery methods. Evolutionary psychology may provide professional interpreters greater understanding and clearer insight into sources of universal concepts that have meaning for a diverse population of interpretive consumers that relate to specific resources. Perhaps evolutionary psychology can shed light upon what elements of a natural or cultural resource have universal meaning and why.

In essence, evolutionary psychology attempts to understand the human mind and behavior of the present as a product of human biological evolution (Cosmides, Tooby & Barkow, 1992; Mithen, 1996; and Buss, 1999). The application of evolutionary theory to the psychology of mind seeks to understand how humans evolved the neural circuits that govern the physical properties of the brain. Human behavior is a manifestation of adaptations to environmental conditions faced by our distant ancestors shaped by natural selection. Stated in another way, evolutionary psychology is attempting to understand how the human mind has evolved in response to adaptive problems faced during our evolutionary history, and how that has resulted in members of the modern human species continuing to survive and reproduce.

It has taken 10 million years for natural selection to sculpt the modern human brain that favors solving day-to-day adaptive problems faced by our hunter-gatherer ancestors. These apparent hard-wired psychological adaptations related to procuring sources of food, shelter, protection from predators, safety, danger, reproduction, and survival are theoretically shared by all humans regardless of their cultural ethnic and socio-economic background. Hence, such evolved psychological adaptations related to solving problems of survival and reproduction are universal. While the expression (behavior) of such psychological adaptations is most certainly influenced by current environmental and cultur-
al factors, problem-solving adaptations associated with survival (such as food selection, shelter, safety, cooperation, phobias, etc.) or reproduction (such as kin recognition, mate preference, attractiveness, reciprocity, parental care, etc.) should be theoretically meaningful to all humans to a greater or lesser degree.

This approach to understanding what is meaningful to humans from an evolved psychological perspective may well be valuable information to build upon in developing a theoretical base for interpretation, specifically with regard to universal concepts. There are a number of possible evolved psychological adaptations that could be examined for their role in human behavior patterns and thus provide a source for understanding potential universal concepts associated with the natural and cultural resources professional interpreters attempt to interpret. The professional interpreter may ask how a particular natural or cultural tangible resource links to some intangible meaning that engages an evolved adaptive psychological mechanism. Interpretive program elements that engage an adaptive psychological mechanism associated with survival or reproduction would seem to be more likely to have intangible meaning to the greatest number of a diverse audience. Concepts associated with family, friendship, neighborhood, home, fear, and competition, for example, are universal concepts that ultimately are linked to issues of survival or reproduction. Perhaps survival and reproduction are two “grand” universal concepts to which all others are linked. Maybe research findings from evolutionary psychological studies can help identify and clarify such conceptual linkages that have the greatest probability of engaging human evolved adaptive psychological mechanisms.

The evolutionary psychologist explores questions such as: what kinds of natural scenery do most humans prefer across cultures and why? Research has shown that humans appear to have a preference for landscape features similar to savanna-like open spaces with intermittent tree cover, open woodlands, and vegetation (Orians, 1980, 1986; Ulrich, 1983). Such landscapes typically include large grazing and browsing animals. The work of Orians and Heerwagen (1992), suggests that there is a human proclivity towards landscapes that offer sources for food and water and shelter from predators and various natural hazards. This could be why many city parks and the like are typically designed with open grass areas and trees or small woodlands sprinkled about. It seems likely that the presence of animals as a food source was a criterion for our hunter-gatherer ancestors in evaluating whether a particular geographic area or landscape offered survival value for remaining until moving on to another location. If humans have evolved a psychologically adaptive or “built-in” preference for open, savanna-like landscapes, perhaps this equates with the field of interpretation’s idea of some universal concepts inherently meaningful to most humans across cultures associated with survival. There is a growing focus on the importance of protecting and therefore interpreting soundscapes (Jensen and Thompson, 2004a; 2004b; Rossman, 2004; Ambrose and Burson, 2004). Are there evolved psychological adaptations associated with specific soundscapes, therefore universally meaningful to humans? Is there a deeper reason why many audio “relaxation” recordings on the market are of woodland sounds, trickling water, rain, and other natural sounds? Are such sounds universally meaningful? There has been some research that has examined human preferences for and benefits of natural sounds (for example Ulrich, 1993; Hartig, Mang and Evans, 1991; Andererson, Mulligan, Goodman, and Regen, 1983). What about smells in nature? Do most humans enjoy the earthy smells of a woodland or open grassy plain, and if so, why? Do most people enjoy the smell of spring flow-
ers or the scent of a summer rain, if so why? Evolutionary psychology is still in its infancy. More research on the tactile, olfactory, auditory, and visual components of natural environments as they relate to human evolved psychological adaptations need to be carried out.

I believe that discussion and collaboration between interpretation researchers (of which there are too few!) and evolutionary psychological researchers might bear mutual benefits for developing theoretical constructs and operational definitions for both fields. For example, what is it that makes a particular animal species charismatic? Could it be that a large animal species fits the image that relates to our ancestral mind that values a species yielding greater cost-benefit if it were to be hunted as a food source? Is that why scores of visitors to National Parks and Zoological Gardens seek and enjoy glimpses of buffalo, bears, and other large animals? Does the large animal image switch on an evolved psychological adaptation associated with the ancestral hunt that gives the animal charisma or allows for a meaningful connection with the animal? How does interpretation provoke and enhance the engagement of possible evolved psychological adaptations (provide opportunity for a meaningful connection) and how is it experienced by individuals? Does experiencing the presence of a large animal engage an evolved psychological adaptation associated with survival or, in interpretive language, engage the universal concept of survival? Does the tangible image of the animal engage a multitude of intangible meanings or universal concepts associated with survival? I think there are many exciting possibilities that go beyond academic curiosity.

Is a concern with the continued existence of wild animal species and their welfare a variant of evolved psychological adaptations associated with hunting? Are there sex differences in terms of what animals are considered charismatic? Is there a sex difference with regard to general affinities for biological organisms? There are data to support the idea that hunting was an activity predominantly performed by men (Tooby & DeVore, 1987). If this is the case and if hunting is primarily an evolved psychological adaptation of the human male, where does the human female fit into this scenario? This could be important information for the interpreter to consider when employing what is believed to be a universal concept (or evolved psychological adaptation) to an audience primarily composed of females. If ancestral females gathered food more than they participated in hunting behavior then an evolved psychological adaptation of women today associated with food procurement might have more to do with plants and other vegetation rather than wildlife resources when forced to choose. Are there sexual differences related to some evolved adaptive psychological mechanism? Depending upon the resource focus of the interpretive program, the professional interpreter might consider these factors when choosing appropriate universal concepts or some variant of intangible meanings. There might be testable differences in the inclinations of men and women to make meaningful connections with a specific resource. As far as I am aware, there have been no systematic studies of such issues. The presence of large wild animals in a landscape not only provide clues to food and water resources but might trigger concern and fear of potential dangers in the landscape as well for example, from large predators. Nonetheless, as Orians and Heerwagen (1992) point out, there is ample evidence in modern society for the appeal of large animals in advertising and art. Evolutionary psychological theorists are currently investigating evolved psychological adaptations associated with beauty, belief, cooperation, reconciliation, attractiveness, conflict, shame, fear, prestige, and status, to mention
only a few. It seems logical that the field of interpretation can benefit from such data being collected.

While there are many questions with few answers in both evolutionary psychology and interpretation, the first steps in any young endeavor is to ask questions, propose possible explanations and then devise creative ways to experiment and test possible explanations. I believe to understand what drives any human being to connect and find personal meaning associated with cultural and natural resources is fundamentally important information for interpretation. The idea and application of universal concepts are central to interpretation theory and practice, and the study of the human mind and behavior from an evolutionary psychological perspective, might lend support to a unified theory of interpretation and practice. As Zarki (2004) points out, many field interpreters are unaware of the vast amount of social science research relevant to the field of interpretation. I think the growing field of evolutionary psychology can add substantially to the knowledge base of the field interpreter and most certainly the interpretation researcher. Conversely, many researchers in the social sciences are unaware of the important information being gathered from an admittedly still fragmented but increasingly cohesive interpretation discipline. Both can gain from collaborative research in gaining understanding the psychological underpinnings of what and why human beings find meaningful connections with the natural environment and cultural milieu.

References


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The purposes of the *Journal of Interpretation Research* are to communicate original empirical research dealing with heritage interpretation and to provide a forum for scholarly discourse about issues facing the profession of interpretation. The *Journal* strives to link research with practice. The *Journal of Interpretation Research* is published by the National Association for Interpretation, the preeminent professional association representing the heritage interpretation profession.

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