

Trailblazing the Concrete Jungle:
Museums Utilizing Interpretive Nature Trails in Urban Communities

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Abstract

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This study defined and described the phenomenon of urban museums that utilize trails to interpret their natural surroundings. It was significant because there was no research regarding museums in urban settings that utilize interpretive trails to study environmental issues. Research was conducted to determine the motivating factors, feasibility, impact, and interpretive goals of their trails and to address the gap in the literature regarding the benefits of urban museums that incorporate interpretive trails. Interviews were conducted with employees from three museums that utilize interpretive trails in urban environments. The primary conclusion was that by utilizing trails to interpret their natural surroundings, urban museums could highlight the importance of native vegetation, educate their visitors about local ecosystems, and explain how these urban ecosystems relate to broader environmental issues. Limitations of this study included a small sample size and the inability to physically visit the sites.

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CHAPTER I: INTRODUCTION

The goal of this study was to define and describe the phenomenon of urban museums that utilize trails to interpret their natural surroundings. There was a gap in the research regarding museums in urban settings utilizing interpretive trails to study the impact of nature and environmental education. In 2010, the United States Census Bureau stated that *urban* areas “must encompass at least 2,500 people.”¹ For the purpose of this paper, *urban museums* were further defined as institutions within established city limits.² *Trails* were defined as outdoor nature trails or paths with interpretive elements, such as waysides that inform visitors of unique ecosystems and encourage them to interact with their natural surroundings.³ *Interpretation*, as defined by Freeman Tilden was “an educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information.”⁴ Lastly, In Richard Louv’s book, *Last Child in the Woods*, he defined *nature* as meaning “natural wildness: biodiversity, abundance – related loose parts in a backyard or a rugged mountain ridge.”⁵

In 1971, the American Association of Museums (AAM), now American Alliance of Museums, issued *Museums and the Environment: A Handbook for Education*. In this publication, they wrote of the importance of environmental education and that museums are not only well

¹ United States Census Bureau, *Urban and Rural Definition*, <https://www.census.gov/geo/reference/ua/uafaq.html> (accessed May 23, 2015).

² This was further defined to include museums that are only within city limits because the purpose of this study was specifically related to the phenomenon of urban museums utilizing this technique. Effectively, this definition eliminated museums located outside city limits that interpret the outdoors through trails because they have different challenges than urban museums.

³ This definition was created for the purpose of this study.

⁴ Freeman Tilden, *Interpreting Our Heritage*. (North Carolina: University of North Carolina Press, 1957), 8.

⁵ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 8.

equipped to accept this challenge, but also responsible to their communities to incorporate nature into the museum experience.⁶ They went on to say that:

All living organisms including man are dependent on the biophysical environment... But because extensive and complex interrelationships exist among all components of the environment, living and nonliving, man's present over-exploitation of natural resources and the effects of his technology have modified the environment to such an extent as to threaten the wellbeing, even the survival, of many species including his own.⁷

In *Speaking for Nature*, Elia Ben-Ari wrote that "one key way to engage people is to explain natural history subjects in terms that are relevant to their lives."⁸ This can go beyond the realms of natural history and can penetrate through every genre of museum.⁹

According to Richard Louv in *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*, society is teaching young people that nature is an abstraction, something that can be avoided, exploited, and ignored.¹⁰ Studies have shown that exposure to nature can decrease stress, provide a restorative environment, and contribute to greater physiological and psychological recovery.¹¹ Louv went on to write, "healing the broken bond between our young and nature is in our self-interest, not only because aesthetics or justice demands it, but also because our mental, physical, and spiritual health depends upon it."¹²

⁶ Ruth Norton Oliver, ed., *Museums and the Environment: A Handbook for Education*, (New York: Arkville Press, 1971), xi.

⁷ Ruth Norton Oliver, ed., *Museums and the Environment: A Handbook for Education*, (New York: Arkville Press, 1971), 14.

⁸ Elia Ben-Ari, "Speaking for Nature," *BioScience* 50 (2000), 4.

⁹ Ruth Norton Oliver, ed., *Museums and the Environment: A Handbook for Education*, (New York: Arkville Press, 1971), 195.

¹⁰ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 2.

¹¹ Peter Kahn and Patricia Hasbach, "The rewilding of the human species," in *The Rediscovery of the Wild*, (Cambridge: MIT Press, 2013), 226-7 and Peter Kahn, *Technological Nature: Adaption and the Future of Human Life*, (Cambridge, MA: MIT Press: 2011), 13.

¹² Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 3.

MUSEUMS

Three museums were selected for this study. One staff member from each institution was interviewed in order to further define and describe the phenomenon of urban museums that utilize trails to interpret their natural surroundings and to obtain data for this study. The criteria used to select museums and interview participants can be found in Chapter III: Methods on page 19. The three museums that agreed to participate were Crystal Bridges Museum of American Art (Crystal Bridges), the Schiele Museum of Natural History (The Schiele), and the Museum of Arts and Sciences (MOAS).

Crystal Bridges is situated on 120 acres of land in Bentonville, Arkansas. The museum opened in November of 2011 and has two types of interpretive trails: nearly five miles of unpaved and narrow nature trails that surrounds the site; and paved connecting trails that link to downtown Bentonville and with other local trails.¹³ Additionally, they partnered with local businesses and municipalities to build a forty-five-mile mile trail system that connects the museum to nearby towns.¹⁴



Figure 1. Downtown Bentonville Entrance.

¹³ Crystal Bridges, "Trails," <http://crystalbridges.org/trails-and-grounds/trails/>. (accessed May 5, 2015).

¹⁴ Scott Eccleston Interview, February 19, 2015, conducted by Jimi Hightower.

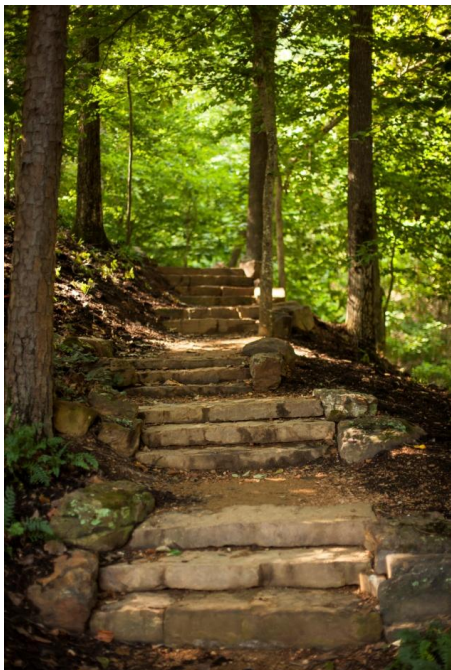


Figure 2. Wooded Trail



Figure 3. Sculpture on Art Walk

Photos Courtesy of Crystal Bridges Museum of American Art

The Schiele is situated on sixteen acres and has been operating for fifty years in Gastonia, North Carolina. The nature trail has been a part of the museum experience since its inception and is a rugged, short, unpaved 0.7-mile trail. The trail has interpretive signage and leads to the 18th Century Back Country Farm, the Garden Memorial, the Catawba Indian Village, the Stone Age Heritage Site, and a pond.¹⁵



Figure 4. Interpretive Panel on Trail



Figure 5. Footbridge



Figure 6. Pond with Interpretive Panel

Photos Courtesy of Tony Pasour from the Schiele Museum of Natural History

¹⁵ Tony Pasour Interview, February 26, 2015, conducted by Jimi Hightower.

MOAS is situated on Tuscowilla Nature Preserve in Daytona Beach, Florida. The museum and its trails have been on the preserve since the 1970s and traverse ninety acres. Within the past decade, the trails have been upgraded to boardwalks because they are more resilient against hurricanes and tropical storms. There are over half a mile of boardwalks nestled in the preserve.¹⁶ The boardwalks are limited at the Museum of Arts and Sciences due to it being a nature preserve and its primary purpose being to preserve the endangered ecosystem.



Figure 7. Boardwalk through Nature Preserve



Figure 8. Boardwalk and Text Panel

Photos Courtesy of the Museum of Arts and Sciences

¹⁶ Museum of Arts and Sciences, “Nature Preserve,” <http://www.moas.org/nature%20preserve.html>, (accessed May 5, 2015).

CHAPTER II: LITERATURE REVIEW

INTRODUCTION

This paper highlighted research that has been done involving the health benefits of nature, how nature can better be incorporated into the built environment, and the role museums play in environmental education by drawing on psychology, architecture, and museology. Current research highlights the role informal learning can play in regard to environmental education. However, there has been little research done on museums that utilize nature trails to interpret their natural surroundings. Research that directly relates to the utilization of trails as an interpretive technique in museums was not found during the course of this study. However, there was research on the benefits nature has on health, how nature can be integrated into the built environment, and the role that museums can play in regard to environmental education. The first section of this literature review described the benefits nature can have on health. The second section synthesized the main findings on the ways that nature has influenced the built environment. The final section examined the benefits of environmental education.

NATURE AND HEALTH

In the past few decades, numerous studies have shown that the natural environment can play a powerful role in fostering people's physical and mental health.¹⁷ In 1992, the term *ecopsychology* gained currency through Theodore Roszak's *The Voice of Earth*.¹⁸ Ecopsychology studies the human-nature relationship through ecological and psychological principles and seeks to understand the emotional human-nature connection in order to adopt

¹⁷ Rachel Kaplan, Stephen Kaplan, and Robert L. Ryan, "With People in Mind: Design and Management of Everyday Nature," *American Psychological Society*, (Washington, DC: Island Press, 1998), 26.

¹⁸ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 44.

sustainable lifestyles and prevent alienation from nature.¹⁹ Scholars and practitioners from diverse fields, including psychology and ecopsychology, have generated relatively consistent findings about the relationship between people and nature.²⁰ Most notably, these findings show that nearby areas and natural landscapes that can be experienced in everyday situations can have a powerful effect on the wellbeing of humans.²¹ It was previously thought that grand, remote, and prolonged experiences with the natural environment were the only way to experience this positive effect.²² However, in “With People in Mind: Design and Management of Everyday Nature,” Rachel Kaplan, Stephen Kaplan, and Robert Ryan wrote that nearby, everyday nature can also have a substantial positive effect on health.²³ For this reason, Louv writes that “unless we act quickly to conserve and restore these places, and create new ones, then nearby nature will become a quaint artifact of another time.”²⁴ Similarly, other studies show that a reconnection to the natural world is fundamental to human health, wellbeing, knowledge, and survival.²⁵

Additionally, studies conducted by ecopsychologists show that exposure to nature can decrease stress, provide a restorative environment, and contribute to greater physiological and psychological health.²⁶ This is reiterated by Richard Louv in his book, *Last Child in the Woods*, when he writes “healing the broken bond between our young and nature is in our self-interest,

¹⁹ International Community for Ecopsychology, “About Ecopsychology,” <http://www.ecopsychology.org/about-ecopsychology/>, (accessed April 16, 2015).

²⁰ Rachel Kaplan, Stephen Kaplan, and Robert L. Ryan, “With People in Mind: Design and Management of Everyday Nature,” *American Psychological Society*, (Washington, DC: Island Press, 1998), 26.

²¹ Rachel Kaplan, Stephen Kaplan, and Robert L. Ryan, “With People in Mind: Design and Management of Everyday Nature,” *American Psychological Society*, (Washington, DC: Island Press, 1998), 26.

²² Rachel Kaplan, Stephen Kaplan, and Robert L. Ryan, “With People in Mind: Design and Management of Everyday Nature,” *American Psychological Society*, (Washington, DC: Island Press, 1998), 26.

²³ Rachel Kaplan, Stephen Kaplan, and Robert L. Ryan, “With People in Mind: Design and Management of Everyday Nature,” *American Psychological Society*, (Washington, DC: Island Press, 1998), 26.

²⁴ Richard Louv, *The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder*, (Chapel Hill, NC: Algonquin Books, 2011), 199.

²⁵ Richard Louv, *The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder*, (Chapel Hill, NC: Algonquin Books, 2011), 3.

²⁶ Peter Kahn and Patricia Hasbach, “The Rewilding of the Human Species,” In *The Rediscovery of the Wild*, (Cambridge: MIT Press, 2013), 226-7.

not only because aesthetics or justice demands it, but also because our mental, physical, and spiritual health depends upon it.”²⁷ Louv is a journalist and author who influenced the field of ecopsychology as well as perspectives on the human-nature relationship.²⁸ He is the co-founder and Chairman Emeritus of the Children & Nature Network, a member of the editorial board for the *Ecopsychology* journal, and is the 2008 recipient of the Audubon Medal.²⁹ In *Last Child in the Woods*, he presents the term *nature-deficit disorder*, explaining that it is not a medical diagnosis, but can offer a way to think about the impact of environmental education and sustainability.³⁰ Nature-deficit disorder describes the “human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses.”³¹ As this research suggests, contact with nature can have a valuable effect on the wellbeing of humans. Dr. Howard Frumkin, former Director of the National Center for Environmental Health at the Center for Disease Control (CDC) states that developing health evidence:

...suggests that contact with nature is a good thing. People find it to be restorative and they find that it makes them feel better. In addition, parks are an opportunity for people to be physically active and to mix with other people – also parts of a healthy, wholesome community.³²

As these studies show, the ramifications of diminishing the natural landscape will be exponential and can potentially be noticed in physiological and psychological health as growth continues.³³

²⁷ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 3.

²⁸ Richard Louv, “About Richard Louv,” <http://richardlouv.com/about/> (accessed April 12, 2015).

²⁹ Richard Louv, “About Richard Louv,” <http://richardlouv.com/about/> (accessed April 12, 2015).

³⁰ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 10.

³¹ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 36.

³² Dr. Howard Frumkin, “Building Healthy Communities,” http://www.cdc.gov/healthyplaces/cdc_healthy_community_design_webserver/cdc_healthy_community_design_transcript.pdf. May 16, 2008. (accessed April 16, 2015).

³³ Ruth Norton Oliver, ed., *Museums and the Environment: A Handbook for Education*, (New York: Arkville Press, 1971), 59.

NATURE AND DESIGN

In line with the growth of this body of research in ecopsychology, a few architecture firms have drawn on the principle ideas of biophilia to influence design and incorporate nature into the built environment.³⁴ The term *biophilia* was first introduced in 1968 by psychologist Erich Fromm in *The Heart of Man*. In his book, Fromm described *biophilia* as a “healthy, normal functioning individual, one who was attracted to life (human and nonhuman) as opposed to death.”³⁵ In 1984, E.O. Wilson wrote *Biophilia*, a book about the biophilia hypothesis, shaping the term from the perspective of an evolutionary biologist.³⁶ He popularized the term and defined it as “the innate tendency to focus on life and life-like processes.”³⁷ The term has been further interpreted by University of Washington psychologist Peter Kahn in “Interaction Pattern Design for Urban Sustainability,” a lecture given to the School of Environmental and Forest Sciences to mean “a fundamental, genetically-based human need and propensity to affiliate with life and life-like processes.”³⁸ In “Can Architecture Become Second Nature?,” psychologist Yannick Joye wrote that, as urbanization increases, urban dwellers have few opportunities to experience these emotions and to explore their biophilic tendencies.³⁹ Biophilic design and architecture emerged from the biophilia hypothesis and became a useful tool in reintegrating nature into urban settings.⁴⁰ In *Last Child in the Woods*, Louv wrote that the cooperation of the two fields has also been encouraged by Dr. Howard Frumkin who recommends that “environmental-health research

³⁴ Terrapin Bright Green, <http://www.terrapinbrightgreen.com>, (accessed April 17, 2015).

³⁵ Peter Kahn, *Technological nature: Adaption and the future of human life* (Cambridge, MA: MIT Press, 2011), 11.

³⁶ Peter Kahn, *Technological nature: Adaption and the future of human life* (Cambridge, MA: MIT Press, 2011), 11.

³⁷ E. O. Wilson, *Biophilia*, (Cambridge: Harvard University Press, 1984), 1.

³⁸ Peter Kahn, “Interaction Pattern Design for Urban Sustainability,” (lecture for the School of Environmental and Forest Sciences, University of Washington – Seattle, WA, February 4, 2015).

³⁹ Yannick Joye, “Can Architecture Become Second Nature? An Emotion-Based Approach to Nature-Oriented Architecture,” In *Ecopsychology* ed. Peter H. Kahn, Jr. and Patricia Hasbach (Cambridge, MA: MIT Press, 2012), 195, 197.

⁴⁰ Peter Kahn, “Interaction Pattern Design for Urban Sustainability,” (lecture for the School of Environmental and Forest Sciences, University of Washington – Seattle, WA, February 4, 2015).

be done in collaboration with architects, urban planners, park designers, landscape architects, pediatricians, and veterinarians.”⁴¹ He also argues that an important design principle should be to preserve access to green spaces and parks.⁴² The incorporation of nature principles into architectural design is manifested in biophilic architecture.⁴³ The main idea of biophilic architecture is that our inborn biophilic needs can be met to some extent by integrating nature or nature-like forms, elements, or conditions into built environments.⁴⁴

In *Technological Nature: Adaption and the Future of Human Life*, Peter Kahn writes that biophilic architecture can be achieved in two ways: by bringing aspects of nature into the built environment, and/or by mimicking key structural properties of nature.⁴⁵ Incorporating some of nature’s awe inspiring qualities into architecture can provide an aesthetic alternative to the dullness and predictability sometimes characterized by modern built environments.⁴⁶ Studies have also shown that emotions, such as fascination and wonder, are known to improve functioning due to attention fatigue and stress.⁴⁷ Biophilic architects utilize theory and empirical evidence as a framework to support the design of the built environment.⁴⁸ Examples of biophilic design are the incorporation of water features, gardens, and natural patina of materials.⁴⁹ While

⁴¹ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 54.

⁴² Dr. Howard Frumkin, “Building Healthy Communities,” http://www.cdc.gov/healthyplaces/cdc_healthy_community_design_webserver/cdc_healthy_community_design_transcript.pdf. May 16, 2008. (accessed April 16, 2015).

⁴³ Peter Kahn, “Interaction Pattern Design for Urban Sustainability,” (lecture for the School of Environmental and Forest Sciences, University of Washington – Seattle, WA, February 4, 2015).

⁴⁴ Yannick Joye, “Can Architecture Become Second Nature? An Emotion-Based Approach to Nature-Oriented Architecture,” In *Ecopsychology* ed. Peter H. Kahn, Jr. and Patricia Hasbach (Cambridge, MA: MIT Press, 2012), 197.

⁴⁵ Peter Kahn, *Technological nature: Adaption and the future of human life* (Cambridge, MA: MIT Press, 2011), 14.

⁴⁶ Yannick Joye, “Can Architecture Become Second Nature? An Emotion-Based Approach to Nature-Oriented Architecture,” In *Ecopsychology* ed. Peter H. Kahn, Jr. and Patricia Hasbach (Cambridge, MA: MIT Press, 2012), 198.

⁴⁷ Yannick Joye, “Can Architecture Become Second Nature? An Emotion-Based Approach to Nature-Oriented Architecture,” In *Ecopsychology* ed. Peter H. Kahn, Jr. and Patricia Hasbach (Cambridge, MA: MIT Press, 2012), 198.

⁴⁸ Peter Kahn, *Technological nature: Adaption and the future of human life* (Cambridge, MA: MIT Press, 2011), 14.

⁴⁹ Terrapin Bright Green, “14 Patterns of Biophilic Design: Improving Health & Well-Being in the Built

informed by science, biophilic design patterns are meant to guide and assist in the design process and connect elements of the built and natural environments.⁵⁰

ENVIRONMENTAL EDUCATION IN MUSEUMS

Museums became more involved in environmental education in the 1970s. This was a logical platform because museums are known for being trustworthy, reliable places that provide authentic and comprehensible presentations of art, history, natural history, science objects, and ideas.⁵¹ In 1971, the American Association of Museums (AAM) Environmental Committee put forth *Museums and the Environment: A Handbook for Education*. In this handbook, authors from various backgrounds—museology, architecture, conservation, etc.—wrote about the importance of creating and building environmental exhibits in museums. In *Museums and the Environment*, architect and conservationist Malcolm B. Wells wrote, “As institutions involving people and buildings, museums can work for, rather than against, our environment. But in terms of example and education, there is even more they can do if only their credibility, their sincerity, is not impaired.”⁵² There has long been a push for museums to provide environmental education to the public in creative and experiential ways. In the AAM handbook, past AAM President William Campbell Steere wrote:

Museums are admirably equipped, through their diverse collections, their expertise in display, their long experience in conservation, and their vast clientele, to play an important role in making the public aware of environmental problems as well as of the means for their solution.⁵³

Environment, (2014), 9, 25, 37.

⁵⁰ Terrapin Bright Green, “14 Patterns of Biophilic Design: Improving Health & Well-Being in the Built Environment, (2014), 21.

⁵¹ John Falk and Lynn Dierking, *Learning from Museums: Visitor Experiences and the Making of Meaning*, (Oxford: AltaMira Press, 2000), 2.

⁵² Malcolm B. Wells, *Museums and the Environment: A Handbook for Education*, ed. Ruth Norton Oliver (New York: Arkville Press, 1971), 177.

⁵³ William Campbell Steere, *Museums and the Environment: A Handbook for Education*, ed. Ruth Norton Oliver (New York: Arkville Press, 1971), vii.

Regardless of the genre, museums can serve as a valuable platform for environmental education because the health of the biophysical environment is a common thread throughout humanity—it affects us all, and it affects our home.⁵⁴ *Museums and the Environment* also served as a call to action regarding the vital role museums could play in educating their visitors about the environment. It goes on to say,

If museums can help their visitors see that all elements in the environment—all elements—are interrelated, they will indeed perform a vital service. Science and natural history museums are by definition engaged in an exposition of the natural world, but other types of museums can also reveal the environment—as it is, as it once was; as people saw it or made it; as living things evolved in it; as it could be, as it should be, as it will be.⁵⁵

Not only did *Museums and the Environment* highlight why museums could be an effective platform for environmental education, it also emphasized how different types of museums could succeed and provide them with a toolkit of ideas and suggestions. *Museums and the Environment* presented exhibit ideas to interpret the environment and suggested sponsoring talks and nature walks to inform visitors of various topics, including uses of the forest, the balance of nature, and local ecosystems.⁵⁶ The AAM handbook also emphasized the need for exhibits that not only teach about the world as a whole but also about the ecosystems right out the front door.⁵⁷ According to Richard Louv, it is challenging to overcome the polar distinction between what is urban and what is natural in the United States.⁵⁸ As stewards of their communities, museums

⁵⁴ William Campbell Steere, *Museums and the Environment: A Handbook for Education*, ed. Ruth Norton Oliver (New York: Arkville Press, 1971), vii.

⁵⁵ Ruth Norton Oliver, ed., *Museums and the Environment: A Handbook for Education*, (New York: Arkville Press, 1971), 160.

⁵⁶ Ruth Norton Oliver, ed., *Museums and the Environment: A Handbook for Education*, (New York: Arkville Press, 1971), 26-28.

⁵⁷ Charles E. Roth, *Museums and the Environment: A Handbook for Education*, ed. Ruth Norton Oliver (New York: Arkville Press, 1971), 133.

⁵⁸ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 26.

must remind their visitors that nature occurs in many forms and is everywhere.⁵⁹ Louv argues that there is less nature in the urban landscape, but that it is still there.⁶⁰

Dr. Lois Silverman received her PhD in social work and has studied how museums affect people's lives and society.⁶¹ Additionally, Silverman, a leading researcher on the learning process of meaning making and social work in museums, suggests in *Meaning Making Matters: Communication, Consequences, and Exhibit Design* that museums have shifted from education-centered museums to experience-centered museums.⁶² According to Silverman, museums have begun to explore the benefits of recreation, sociability, and enchanting experiences that they can fulfill to foster learning.⁶³ A constructivist approach could be another useful tool in regard to environmental education and the utilization of nature trails because it requires the transformation of knowledge through active, original thinking.⁶⁴ Jay Rounds and Lois Silverman have extensively studied the learning process of meaning making, specifically in museums, in various publications, including *Meaning Making Matters* (Silverman) and *Meaning Making: A New Paradigm for Museum Exhibits?* (Rounds). The idea of meaning making is better understood in relation to its counterpart—cultural transmission.⁶⁵ Cultural transmission is the one-way transference of information from the expert to the novice.⁶⁶ In this process, the learner is

⁵⁹ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 26.

⁶⁰ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 12.

⁶¹ Indiana University, "IU School of Social Work Alumni Association," <http://alumni.iupui.edu/associations/socialwork/profiles/silverman.html> (accessed May 23, 2015).

⁶² Lois H. Silverman, "Meaning Making Matters: Communication, Consequences, and Exhibit Design." *Exhibitionist* (Spring 2000): 12.

⁶³ Lois H. Silverman, "Meaning Making Matters: Communication, Consequences, and Exhibit Design." *Exhibitionist* (Spring 2000): 12.

⁶⁴ Peter Kahn, *The Human Relationship with Nature: Development and Culture*, (Cambridge, Massachusetts: MIT Press, 1999), 214.

⁶⁵ Jay Rounds, "Meaning Making: A New Paradigm for Museum Exhibits?" *Exhibitionist* (Spring 2000): 6.

⁶⁶ Jay Rounds, "Meaning Making: A New Paradigm for Museum Exhibits?" *Exhibitionist* (Spring 2000): 6.

understood as a passive recipient and outcomes are seen in terms of the acquisition of culture.⁶⁷ In contrast, the process of meaning making is a two-way interaction through which knowledge and/or meaning is constructed uniquely in each individual.⁶⁸ Through this process, learners are seen as an active agent, and outcomes are defined in terms of the construction of meaning.⁶⁹ The most prominent difference in these processes is the distinction between "facts" and "meanings" and their respective roles in how individual human beings manage their lives within human societies.⁷⁰ Meaning making and interpretation are closely related to the informal learning process and can be even more effective when used with constructivist approaches.⁷¹

Louv argues that, although many of today's children lack regular physical contact with nature, they are more aware than any other generation of the global threats to the environment.⁷² According to constructivism, children actively make meaning of their world by fully engaging with problems and issues that captivate them.⁷³ Effective environmental education could utilize constructivist theories to encourage students to actively participate and experience nature in order to develop an intimacy with their natural surroundings.⁷⁴ The constructivist theory argues that new knowledge is created from new experiences that are interpreted in light of the learner's prior knowledge.⁷⁵ Furthermore, meaning making combines experiences and knowledge that was

⁶⁷ Jay Rounds, "Meaning Making: A New Paradigm for Museum Exhibits?" *Exhibitionist* (Spring 2000): 6.

⁶⁸ Jay Rounds, "Meaning Making: A New Paradigm for Museum Exhibits?" *Exhibitionist* (Spring 2000): 6.

⁶⁹ Jay Rounds, "Meaning Making: A New Paradigm for Museum Exhibits?" *Exhibitionist* (Spring 2000): 6.

⁷⁰ Jay Rounds, "Meaning Making: A New Paradigm for Museum Exhibits?" *Exhibitionist* (Spring 2000): 6.

⁷¹ Gregory M. Benton, "Visitor Meaning-Making at Grand Canyon's Tusayan Museum and Ruin." *Curator* 51, no. 3 (2008): 298.

⁷² Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 1.

⁷³ Peter Kahn, *The Human Relationship with Nature: Development and Culture*, (Cambridge, Massachusetts: MIT Press, 1999), 214.

⁷⁴ Peter Kahn, *The Human Relationship with Nature: Development and Culture*, (Cambridge, Massachusetts: MIT Press, 1999), 222.

⁷⁵ Gregory M. Benton, "Visitor Meaning-Making at Grand Canyon's Tusayan Museum and Ruin." *Curator* 51, no. 3 (2008): 298.

acquired prior to the visit with experiences that took place during the visit to complete the constructivist perspective.⁷⁶

In Rounds's article, *Meaning Making: A New Paradigm for Museum Exhibits?*, he asserts that traditional exhibit design has undermined the visitors' experience and that new approaches should be explored to more powerfully stimulate and support visitor meaning making.⁷⁷ An apparent strength of meaning making is that it reasserts the role of the visitor as an active participant in the exhibit experience.⁷⁸ In *Last Child in the Woods*, Louv wrote that Robin Moore, an international authority on the design of children's play and learning environments, says that "natural settings are essential for healthy child development because they stimulate all the senses and integrate informal play with formal learning."⁷⁹ Additionally, he states that "multisensory experiences in nature help to build the cognitive constructs necessary for sustained intellectual development and stimulate imagination."⁸⁰

In *The Human Relationship with Nature*, Peter Kahn writes that it can be difficult for teachers to effectively instruct and address environmental concerns within a traditional educational setting due to lack of time, interest, testing, and prioritization of issues.⁸¹ However, museums have the special opportunity to help students of all ages develop environmental awareness and can provide programs that inspire young people through field trips or independent site visits.⁸² By using trails to interpret the natural environment, museums can create dynamic

⁷⁶ Gregory M. Benton, "Visitor Meaning-Making at Grand Canyon's Tusayan Museum and Ruin." *Curator* 51, no. 3 (2008): 298.

⁷⁷ Jay Rounds, "Meaning Making: A New Paradigm for Museum Exhibits?" *Exhibitionist* (Spring 2000): 8.

⁷⁸ Jay Rounds, "Meaning Making: A New Paradigm for Museum Exhibits?" *Exhibitionist* (Spring 2000): 7.

⁷⁹ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 86.

⁸⁰ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 87.

⁸¹ Peter Kahn, *The Human Relationship with Nature: Development and Culture*, (Cambridge, Massachusetts: MIT Press, 1999), 220.

⁸² Ruth Norton Oliver, ed., *Museums and the Environment: A Handbook for Education*, (New York: Arkville Press, 1971), 194.

exhibits to encourage meaning making and foster support for conserving natural resources, preserving biodiversity, and protecting habitats.⁸³ The following is stated by Malcolm B. Wells in *Museums and the Environment*,

The emerging role of the museum in America is to hold a mirror up to her ugliness, to education, and to offer healthy solutions. If you want to see tomorrow's civilization, look at today's kids. They will create it. And the way they create it will depend, to a large extent, on the quality of the alternatives presented to them by their museums and schools.⁸⁴

Museums can work with their communities to develop nature trails that incorporate native plants and green spaces that allow people to travel through neighborhoods while casually experiencing nature.⁸⁵ In *A Call to Action from the Summit on Sustainability Standards in Museums*, AAM implores museums to highlight issues of environmental justice "...as museums are vital parts of local and global communities."⁸⁶

CONCLUSION

As made evident in the 1971 AAM handbook, *Museums and the Environment*, museums of all genres have been encouraged to spur environmental awareness and education for at least the past four decades. Louv, Silverman, Rounds, and Kahn suggest that techniques such as experiential learning, meaning making, and direct contact with the outdoors can be a valuable approach to environmental education.

In Rachel Kaplan, Stephen Kaplan, and Rober Ryan's study "With People in Mind," they suggested that even local contact with nature, such as visiting a park or walking along an

⁸³ Elia Ben-Ari, "Speaking for Nature," *BioScience* 50 (2000), 1.

⁸⁴ Malcolm B. Wells, *Museums and the Environment: A Handbook for Education*, ed. Ruth Norton Oliver (New York: Arkville Press, 1971), 179-180.

⁸⁵ Richard Louv, *The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder*, (Chapel Hill, NC: Algonquin Books, 2011), 200.

⁸⁶ AAM, "Museums, Environmental Sustainability and Our Future," *A Call to Action from the Summit on Sustainability Standards I Musuems 2013*, 12.

intercity trail, has profound effects on people's wellbeing.⁸⁷ Additionally, in *The Rewilding of the Human Species*, Peter Kahn and Patricia Hasbach show that exposure to nature can decrease stress, provide a restorative environment, and contribute to greater physiological and psychological health.⁸⁸ In *The Nature Principle*, Louv wrote that urban is the new rural; even in the densest cities, opportunities to encounter the natural world surround us.⁸⁹ Louv writes that "unless we act quickly to conserve and restore these places, and create new ones, then nearby nature will become a quaint artifact of another time."⁹⁰

⁸⁷ Rachel Kaplan, Stephen Kaplan, and Robert L. Ryan, "With People in Mind: Design and Management of Everyday Nature," *American Psychological Society*, (Washington, DC: Island Press, 1998), 26.

⁸⁸ Peter Kahn and Patricia Hasbach, "The Rewilding of the Human Species," In *The Rediscovery of the Wild*, (Cambridge: MIT Press, 2013), 226-7.

⁸⁹ Richard Louv, *The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder*, (Chapel Hill, NC: Algonquin Books, 2011), 199.

⁹⁰ Richard Louv, *The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder*, (Chapel Hill, NC: Algonquin Books, 2011), 199.

CHAPTER III: METHODS

The goal of the study was to define and describe the phenomenon of urban museums that utilize trails to interpret their natural surroundings. Semistructured interviews were the primary method as they provided insight and allowed for more casual conversation.⁹¹ Additionally, semistructured interviews were utilized to allow for follow-up questions to obtain more detailed and focused information.⁹² Using this method permitted specific topics and issues to be discussed during the interview while allowing for spontaneity in the exact way the questions were asked.⁹³ This was beneficial because the interview questions were not site specific, and questions were often answered through casual conversation or were not applicable to the particular institution. Additionally, interviews were conducted in order to add to the body of literature regarding museums that utilize trails to interpret their natural environment.

As a case study was most appropriate for exploring the potential of museum trails, three museums were selected to participate in this study, and one individual from each museum was interviewed for 30-45 minutes. In order to be selected for participation, the museums had to meet the following criteria:

- Located within established city limits
- Located within city with population of at least 25,000
- Utilized trails with an interpretive element

⁹¹ Judy Diamond, Jessica J. Luke, and David H. Uttal, David H., *Practical Evaluation Guide: Tool for Museums and Other Informal Educational Settings*. (Lanham, New York, Toronto, and Plymouth, UK: AltaMira Press, 2009), 70.

⁹² Judy Diamond, Jessica J. Luke, and David H. Uttal, David H., *Practical Evaluation Guide: Tool for Museums and Other Informal Educational Settings*. (Lanham, New York, Toronto, and Plymouth, UK: AltaMira Press, 2009), 77.

⁹³ Judy Diamond, Jessica J. Luke, and David H. Uttal, David H., *Practical Evaluation Guide: Tool for Museums and Other Informal Educational Settings*. (Lanham, New York, Toronto, and Plymouth, UK: AltaMira Press, 2009), 72.

The museums selected for this study were required to be within established city limits because the goal was to determine how and why urban museums chose to utilize interpretive trails to educate their visitors about their natural surroundings. There was no maximum limit for population.

The museums chosen were Crystal Bridges Museum of American Art in Bentonville, Arkansas, the Museum of Arts and Sciences in Daytona Beach, Florida, and the Schiele Museum of Natural History in Gastonia, North Carolina. The populations of these towns were between 40,000 – 74,000.

One participant from each institution was selected to be interviewed. Each participant was identified through staff lists included on their respective museum's website. Participants were further vetted based on the following criteria:

- Knowledge of institution's trails
- Experience in exhibit design, trail design, education, and/or interpretation

Interviewees were not chosen according to age, race, or gender; they were chosen because of their position within their museum and knowledge of the interpretive trails.

Participants were contacted via e-mail in early February 2015. Phone interviews were scheduled upon their response and completed by the end of the month. The participants were Scott Eccleston, Director of Facilities and Grounds at Crystal Bridges; Tony Pasour, Head of Interpretation at the Schiele Museum; and James Zacharias, Curator of Education at the Museum of Arts and Sciences. During these thirty to forty-five-minute interviews, interviewees were asked about motivating factors, feasibility, and impact of utilizing interpretive trails as well as interpretive goals. The interviews were audio recorded for later reference and research use only.

The interview questions were not site specific. The purpose of the interviews was to learn more about why urban museums choose to utilize interpretive trails to educate their visitors about the natural surroundings and unique natural environments. The questions below highlight the overarching themes that the interview questions strove to answer.

EVALUATION QUESTIONS

➤ **Motivating Factors**

- What were the motivating factors behind utilizing trails to interpret your natural surroundings?

➤ **Feasibility**

- To what extent do you think other urban museums can or should implement trails?

➤ **Impact**

- What was the impact on your visitors by interpreting your natural surroundings?

➤ **Interpretive Goals**

- What were the interpretive goals incorporated into the trail design?

INTERVIEW INSTRUMENT

The interview instrument was structured around the four evaluation questions in order for them to be further addressed.

➤ **Motivating Factors**

- What need in your community were you addressing by using trails to interpret your natural surroundings?
- How did you come to the decision to incorporate interpretive trails?
- What was the administrative process surrounding the decision?
- Were there any references, literature, or other sources that informed the development of your trails?

➤ **Feasibility**

- Is your site unique in some way that allows you to have trails?
- How should urban museums go about including trails?
- How should museums do this if they have inadequate space?
- How did you accumulate the funds to build trails?
- What do interpretive trails allow you to do that an indoor exhibit could not?
- Do you see interpretive trails as being a trend among museums? If so, where else are you hearing conversations about this interpretation professionally?

➤ **Impact and Visitor Research**

- What are your perceptions of the impact these trails have had on your visitors?
- Was it something your visitors wanted?
- How frequently are the trails visited?
- What has the visitor response been to the trails?
- As an institution, how do you define success of the trails with visitors?
- Are you doing any formal evaluation/research with visitors?
- Do you have formal outcomes for the trails? If so, what are they?

➤ **Interpretive Goals**

- What interpretive topics and content are represented in the trails?
- To what extent are you trying to convey environmental issues through trails?

Upon completion of interviews, the recordings were reviewed in order to identify themes through data reduction. Data reduction is the “process of selecting, focusing, simplifying, abstracting, and transforming the data that appear in written-up field notes or transcriptions.”⁹⁴ Data reduction is also referred to as coding, in which the researcher assigns meaning to the information compiled during a study.⁹⁵ After assigning codes, the evaluator can organize the data and begin to make meaning from it. The researcher can use an inductive or deductive approach to determine codes for the data.⁹⁶ An inductive approach allows for codes to emerge from the data, whereas in a deductive approach, the researcher creates preconceived codes prior to analyzing the data.⁹⁷ For this research, an inductive approach was used because it allowed more open-ended coding and was less rigid.⁹⁸

⁹⁴ Judy Diamond, Jessica J. Luke, and David H. Uttal, David H., *Practical Evaluation Guide: Tool for Museums and Other Informal Educational Settings*. (Lanham, New York, Toronto, and Plymouth, UK: AltaMira Press, 2009), 104.

⁹⁵ Judy Diamond, Jessica J. Luke, and David H. Uttal, David H., *Practical Evaluation Guide: Tool for Museums and Other Informal Educational Settings*. (Lanham, New York, Toronto, and Plymouth, UK: AltaMira Press, 2009), 104.

⁹⁶ Judy Diamond, Jessica J. Luke, and David H. Uttal, David H., *Practical Evaluation Guide: Tool for Museums and Other Informal Educational Settings*. (Lanham, New York, Toronto, and Plymouth, UK: AltaMira Press, 2009), 105.

⁹⁷ Judy Diamond, Jessica J. Luke, and David H. Uttal, David H., *Practical Evaluation Guide: Tool for Museums and Other Informal Educational Settings*. (Lanham, New York, Toronto, and Plymouth, UK: AltaMira Press, 2009), 105.

⁹⁸ Judy Diamond, Jessica J. Luke, and David H. Uttal, David H., *Practical Evaluation Guide: Tool for Museums and Other Informal Educational Settings*. (Lanham, New York, Toronto, and Plymouth, UK: AltaMira Press, 2009), 105.

CHAPTER IV: FINDINGS & ANALYSIS

The purpose of this study was to define and describe the phenomenon of urban museums that utilize trails to interpret their natural surroundings. The findings from the interviews were organized and reviewed by following the interview questions.

FINDINGS

Question One: What need in your community were you addressing by using trails to interpret your natural surroundings?

Eccleston stated that incorporating trails was in the plans from the beginning and that the grounds would play a major role in the museum. They wanted their visitors to be able to take ownership of the land and trails, so they focused on creating a place for people to come “dream, do, and discover.”⁹⁹ They also wanted to build walkways that could link Bentonville safely.

Pasour stated that he did not know what needs in the community were being met by using trails because they had been around for fifty years.

Zacharias said that the trails were already in place when he came along, but that they were most likely incorporated because the museum sits on a nature preserve. Zacharias also said that it was important for their outdoor areas to be interpreted because the nature preserve is an endangered ecosystem that has been preserved since the 1950s and that boardwalk trails make it more accessible to visitors.

Question Two: How did you come to the decision to incorporate interpretive trails?

Eccleston stated that it was important to the founders to incorporate the history of the grounds and the landscape itself into the trails. Additionally, they chose to use native plants in order to change people’s perceptions of native vegetation and highlight their importance in local

⁹⁹ Scott Eccleston Interview, February 19, 2015, conducted by Jimi Hightower.

ecology. They also chose to connect their Art Trail with the downtown square to provide pedestrian access to the museum and highlight the importance of the downtown community.

The Schiele has wooded property around their facility, and Pasour said that providing a trail seemed like a natural extension and could give people the opportunity to explore.

Zacharias said that they incorporated trails to take advantage of their location on a nature preserve and to have science discussions. Additionally, the trails run through the Tusawilla Nature Preserve, which is all that remains of the hydric hammock, a unique ecosystem that is now surrounded by shopping malls and housing editions.

Question Three: What was the administrative process surrounding the decision?

Due to Eccleston's direct involvement with implementation of the trails, he was the only one able to answer the third question. In his meetings with the founders, he asked if the grounds were to be meaningful or simply window dressings. The founders were adamant about the grounds being a meaningful and direct part of the museum. They wanted people to see the outside as an extension of the inside. Additionally, it was very important to the founders for Eccleston to highlight native plants. Eccleston stated that the enthusiasm from the donors about incorporating the landscape "empowered his staff and made the artists and curators feel they really had a hand in the project."¹⁰⁰

Question Four: Were there any references, literature, or other sources that informed the development of your trails?

Eccleston said that Doug Tallamy's *Bringing Nature Home* and Richard Louv's *Last Child in the Woods* were very informative and assisted in the design and implementation of the trails. Additionally, he went to museums and gardens that inspired him, one of which was

¹⁰⁰ Scott Eccleston Interview, February 19, 2015, conducted by Jimi Hightower.

Winterthur in Philadelphia, Pennsylvania. He was able to see how they designed and interpreted their natural surroundings and how people were engaged outside.

Pasour said he was also familiar with Louv's book, and they did more research on repurposing a part of the trail to create an outdoor play space that utilized natural features such as soil, rocks, and logs.

Question Five: Is your site unique in some way that allows you to have trails?

Eccleston responded that their site is unique because they have a lot of land [120 acres] that is heavily forested; however, that is not uncommon in Arkansas. He said that the museum is built in the lowest area of a ravine and is not visible from the road. He said that it creates intimacy with the landscape and allows it to set the tone for the building.

Pasour said that their location is not necessarily unique in respect to North Carolina.

Zacharias responded that the Museum of Arts and Sciences is unique in that it is on a nature preserve; therefore, they have more resources available to them.

Questions Six and Seven: How should urban museums go about including trails? How should museums do this if they have inadequate space?

Eccleston and Pasour said that working with the city and municipalities is incredibly important because they often have property available, and if the trails can connect to others, it creates valuable real estate. Eccleston also said that they got creative by making parking limited, and their site is linked to the downtown square through connecting trails so people are encouraged to walk to the museum.

Pasour and Zacharias suggested that museums partner with other agencies that have more land, even if it is not adjacent to the museum, to create interpretive signage and form a new partnership. Additionally, the partners could share the revenue generated as well as the publicity.

Zacharias suggested that the museum conduct scheduled natural history programs at the site in addition to interpretive signage.

Question Eight: How did you accumulate the funds to build the trails?

Each interviewee's response to this question was unique and highlighted the various funding opportunities available.

Eccleston said they partnered with businesses in town, but that the proposal was very important. They painted a vivid picture of how the trails would create social gathering spaces and how they would benefit the community by linking the museum with the downtown as well as nearby towns. He said this was a very effective way to accumulate funding, but museums should be prepared to compromise.

Pasour said the Schiele Museum's funding structure is unusual in that it is funded by city government, state funds, and grants. He said the basic maintenance for the trails comes from a mixture of those, but special projects are paid for by grants, local clubs, and the community and are project specific.

Zacharias said that a donor offered to pay to upgrade the trails to boardwalks, and grants matched his donation. Additionally, the city owns the preserve but does not maintain it, and if they want to expand, they have to get city approval.

Question Nine: What do interpretive trails allow you to do that an indoor exhibit cannot?

Eccleston stated that the exterior is completely immersive and allows the visitor to greater appreciate the inside. He also said that they encourage visitors to paint and do other activities on the grounds to flex their creativity and gain a better appreciation for the art works inspired by nature.

Pasour said that there are lots of things the museum would like to interpret, but they simply do not have the gallery space; the trails allow them to give their visitors a snapshot of their backyard. He also said that the trails put the visitor into the natural world, and the exposure to the real, natural world carries the initiative of the museum.

Zacharias said that the trails allow their visitors the chance to reconnect with nature and see flora and fauna in their natural environment. He also said that recreated nature exhibits do not allow the visitor to immerse their senses in the outdoor experience, but nature trails do.

Question Ten: Do you see interpretive trails as being a trend among museums? If so, where are you hearing conversations about this interpretation professionally?

Eccleston said that he thought that many museums believe they have to have large tracts of land, and in some cases, it could be true; however, the details are what make it successful. He also encouraged museums to be creative with their spaces and think about building upward rather than outward in regard to outdoor spaces.

Pasour said that incorporating interpretive trails could be a valuable role for museums to pursue, especially if they have the means and space to do so. He also said that it was a good way to expand the reach and impact of the museum.

Zacharias said interpretive trails can be a great way to interpret the outdoors, and that, even if it is in a disturbed environment, it is a history that people should also know about.

Questions Eleven – Seventeen:

The three museums had only conducted evaluations of their indoor spaces and just had approximate answers for the questions regarding the impact of the trails (questions 11-17). For this reason, these seven questions have been interpreted as one larger question inquiring about the impact of the trails.

Eccleston said that, according to their extensive evaluations conducted in the galleries, the trails are seen as an access point to the museum by their visitors. Through these evaluations, they discovered that 260,000 of their 500,000 visitors used the trails in 2014. Before the building was open to the public, they created trails leading to an overlook so people could watch it progress because the building cannot be seen from the road due to it being situated in a ravine. Because of this, their visitors learned that the trails were an integral part of the museum before the structure was completed.

Pasour said that, a lot of visitors seem to enjoy the nature trails, and, because the trails are free, a lot of visitors use them for exercise. He also said that their nature trail is viewed as a moderate success and that approximately half their visitors utilize the trails.

Zacharias said that the museum does not have a way of counting visitors on the trails, but that visitors really seem to enjoy them, especially because they are free. He estimated that half of their 80,000 yearly visitors a year explore the boardwalk trails.

Question Eighteen: What interpretive topics and content are represented in the trails?

Eccleston said that they want visitors to explore and engage with the landscape, so they have incorporated obstacles in some of the nature trails to encourage visitors to discover. He said they have layered interpretation that includes some signage and a number of tours that highlight different flora and fauna. The museum also hosts special speakers that talk about various aspects of the grounds, such as horticulturalists and irrigation specialists. Additionally, the museum launched a mobile application in 2015 that vibrates when the visitor gets near a native plant species and then tells the user about the history and usage of the nearby plants.

Pasour said that the Schiele interprets native flora and fauna, as well as pond and stream ecology, geology, and soils. The trail leads to outdoor sites that look at local history, regional

indigenous people, and European settlers and how these early people interacted with their environment.

Zacharias said that they utilize an interpretive brochure, audio content on hand cranks, tours, and signage that includes text panels and tombstone labels with plant names located in the hydric hammock.

Question Nineteen: To what extent are you trying to convey environmental issues through trails?

Eccleston said that some environmental outcomes at Crystal Bridges are to highlight the importance of water, sustainability, and invasive species control. They also encourage visitors to be conscious of their environmental footprint by utilizing the connecting trails to walk or bike to the museum.

Pasour said that the Schiele has local environmental outcomes that are often seasonal. They will talk about birds of prey and their role in the local ecosystem in the cold winters, whereas during the hot summers, they will highlight the need for water conservation. He also said that when local environmental issues arise, they try to incorporate those.

Zacharias said that one of their outcomes is to teach people about their surrounding endangered ecosystem, conservation, invasive species control, last refuge for plants and animals, and highlight that the preserve is a stopover for migratory birds.

ANALYSIS

Upon completion of interviews, they were reviewed and coded in Microsoft Excel. The intention of coding was to identify commonalities or differences among the three interviewee's answers. Through coding, six themes regarding the importance of trails to interpretive programs in museums were identified and the data was further analyzed to determine whether further coding should be completed. These themes include:

- Creating a community space
- Forging partnerships
- Providing an experience
- Providing additional gallery space
- Interpretation of the natural environment
- Interpretative techniques

Although they were similar, “interpretation of the natural environment” and “interpretive techniques” were coded as individual themes. This was done because “interpretation of the natural environment” specifically related to environmental elements that were interpreted on trails, whereas “interpretive techniques” simply refers to how the information was conveyed rather than the topics that were discussed. This included waysides, text panels, hand cranks, etc.

For larger categories, such as “interpretation of the natural environment,” the data was reviewed again and subthemes were identified. These subthemes were created because they all fell under the larger theme of interpretation of the environment but had themes among themselves. Examples of subthemes were interpretation of “local ecosystem” and “native flora.”

For the purpose of this study, the following data has been presented in accordance to the themes that were identified in coding rather than by the interview instrument because some thematic elements were answered in different questions.

	A	B	C	D
1	C - Creating a Community Space		G - Providing Additional Gallery Space	
2	P - Forging Partnerships		E - Interpretation of the Natural Environment	
3	EX - Providing an Experience		I - Interpretative Techniques	
4	create a place to dream, do and discover CB	EX/C		
5	link the town safely CB	C	Visitation	
6	Interpretation of an endangered ecosystem - MOAS	E	260,000 of 500,000 - CB	C
7	accessibility - MOAS	C	half of visitors - S	C
8			40,000 of 80,000 - MOAS	C
9	Q. 2			
10	incorporate history of the grounds - CB	I		
11	native plants to change visitor's perceptions - CB	I	Q. 18	
12	a natural extension for visitors to explore - S	G/EX	explore and engage with the landscape - CB	EX
13	nature preserve and to promote science discussions - MOAS	E	signage - CB	I
14			tours - CB	I
15	Q. 3		highlight flora/fauna - CB	E
16	see outside as an extension of the inside - CB	G	app - CB	I
17			native flora and fauna - S	E
18	Q. 5		pond and stream ecology - S	E
19	Lots of land, but not unique to AR - CB	?	geology - S	E
20	Not unique to NC - S	?	soils - S	E
21	is unique because it's on a preserve - MOAS	?	early peoples interaction with their environment - S	E
22			interpretive brochure - MOAS	I
23	Q. 6 & 7		audio content on hand cranks - MOAS	I
24	work with municipalities - CB & S	P	tours - MOAS	I
25	get creative - CB	EX	text panels, tomb stone labels - MOAS	I
26	partner with other agencies with more land - S & MOAS	P		
27			Q. 19	
28	Q. 8		importance of water, sustainability, and invasive species control - CB	E
29	partnered with business in town - CB	P	encourage walking and biking - CB	E
30	city and state funds, and grants - S	P	water conservation - S	E
31	donor - MOAS	P	seasonal environmental issues - S	E
32			endangered ecosystem - MOAS	E
33	Q. 9		conservation - MOAS	E
34	creates a completely immersive experience - CB	EX	invasive species control - MOAS	E
35	larger gallery space - S	G	last refuge for plants and animals - MOAS	E
36	exposure to the real, natural world- S	E	preserve as a stopover for migratory birds - MOAS	E
37	chance to reconnect with nature - MOAS	EX		E
38	immerse their senses in the outdoor experience - MOAS	EX	preserve as a stopover for migratory birds - MOAS	E

Figure 9. Coding Rubric

After coding the responses, the data was again sifted through and analyzed to assess which museums matched the codes. The table below shows the codes in relation to how they were met by the institutions.

	Creating Community Space	Forging Partnerships	Providing an Experience	Providing Additional Gallery Space	Interpretation of the Natural Environment	Interpretive Techniques
Crystal Bridges	X	X	X	X	X	X
The Schiele	X	X		X	X	X
MOAS	X	X	X	X	X	X

Figure 10. Table of Themes

CREATING COMMUNITY SPACE

Each interviewee highlighted ways that their institution could foster a greater sense of community through their trails. They each do this by providing free, public access to their trails. Eccleston and Pasour said their visitors utilize the trails for exercise, and at least one interview participant said their trails were accessible to all, safely link the town, or provide a creative space. Eccleston said that their visitors are encouraged to walk or bike to the museum on the trails and are encouraged to “dream, do, and discover.”¹⁰¹

FORGING PARTNERSHIPS

Each site was unique in how they funded the construction and maintenance of the trails. However, there was some overlap in regard to forging partnerships with local municipalities to generate funds. Zacharias suggested that if a museum would like to incorporate trails but is lacking the space, they could expand by forging partnerships with agencies that have more land and provide interpretive elements for the space. There were also unique answers in regard to funding, which included forging partnerships with local business, utilizing city and/or state funds

¹⁰¹ Scott Eccleston Interview, February 19, 2015, conducted by Jimi Hightower.

and grants, and approaching donors for special funding. Eccleston and Pasour said that the situation of their sites on large tracts of land was not unique due to their geographical locales of Arkansas and North Carolina. However, Zacharias said that MOAS is unique in that it is on a nature preserve, but he also said that partnerships with nature preserves are not uncommon in Florida.

PROVIDING AN EXPERIENCE

Eccleston said that the trails create a completely immersive experience and allow visitors to explore and engage with the landscape. Zacharias said that their trails allow visitors to immerse their senses in the outdoor experience and give them a chance to reconnect with nature.

GALLERY SPACE

Eccleston and Zacharias said their outdoor space and trails were essentially a larger gallery space and are encouraged to be a natural extension for visitors to explore. Pasour said that the Schiele's trails lead to outdoor exhibits and assist in expanding their gallery space outdoors.

INTERPRETATION OF THE NATURAL ENVIRONMENT

The greatest overlap occurred in reference to interpretive elements that convey environmental awareness and education. These included things that fit under the larger category of "interpretation of the natural environment" but that could also be further refined into subthemes. These include:

- Interpretation of the local ecosystem and the human-nature relationship
- Utilization of native flora
- Importance of sustainability

All three interviewees said they were trying to convey environmental issues through their trails, and each focused primarily on their local environmental issues and ecology. The Schiele and MOAS heavily emphasized the importance of their natural ecosystems and strive to educate their visitors about their unique locale. Pasour said that the Schiele emphasizes pond and stream ecology and interprets early people's interactions with the environment to highlight the human-nature relationship.¹⁰² MOAS interprets their local endangered ecosystem of the hydric hammock and highlights the preserve's role as a last refuge for plants and animals as well as a stopover for migratory birds. They also use this space to promote science discussions.¹⁰³ Crystal Bridges Museum of American Art interprets their native flora and the importance of water conservation.¹⁰⁴

Educating visitors about native flora and fauna and invasive species control was a major interpretive element mentioned by each museum. Each museum is interpreting the environment by highlighting the valuable role native flora and fauna play in local ecosystems. Both Crystal Bridges and the Schiele explicitly mentioned the importance of water conservation and sustainability and how they are trying to convey those issues to their visitors. Although each museum is not interpreting their environments exactly the same way, they are highlighting the role local environments play in the larger ecosystem.

INTERPRETIVE TECHNIQUES

Among the three museums there was overlap and individuality in interpretive techniques. Eccleston and Pasour said that their museums incorporate the history of the area and the grounds in their interpretation. All three interviewees said that their museums utilize interpretive signage (text panels, tombstone labels, etc.) to interpret what their visitor is seeing and experiencing.

¹⁰² Tony Pasour Interview, February 26, 2015, conducted by Jimi Hightower.

¹⁰³ James Zacharias, Interview, February 25, 2015, conducted by Jimi Hightower.

¹⁰⁴ Scott Eccleston Interview, February 19, 2015, conducted by Jimi Hightower.

Eccleston said that the signage is limited in order to encourage visitors to engage and interact with their surroundings but that a mobile application is available as an interpretive element.

Eccleston and Zacharias said that their museums offer tours of the trails and grounds. Zacharias said that MOAS utilizes interpretive brochures and audio content on hand cranks to supplement the interpretive signage.

CHAPTER V: DISCUSSION & RESULTS

There were six themes that emerged in the review of interviews that were further discussed in this chapter. These included:

- Creating community space
- Forging partnerships
- Providing an experience
- Providing additional gallery space
- Interpretation of the natural environment
- Interpretive techniques

Due to the age ranges of the museums and their trails, some questions (such as, “What was the administrative process surrounding the decision?”) were unable to be answered because the reasoning was simply unknown to the interviewee. In the case that an interviewee’s response is not listed, they were unable to answer the question due to the age of the museum or the length of their employment. The exception to this was Scott Eccleston, because he was directly involved in the design and production of the trails at Crystal Bridges. Additionally, questions 6 and 7 were often answered together and became essentially one question. None of the museums were able to effectively respond to questions 11-17 (impact) because they had not conducted evaluations of their trails. Answers to these questions were only educated estimates regarding approximate numbers and perceptions of visitors in regard to the trails. However, they may have been able to answer some questions to an extent, so their responses were combined rather than listed separately.

CREATING COMMUNITY SPACE

Each museum's trails foster a greater sense of community in various ways. One way is by providing free access to their trails. Crystal Bridges has gone a step further in creating interlinking trails that connect their museum to the downtown and surrounding neighborhoods and towns with foot and bike paths. Visitors are encouraged to utilize the grounds and trails to stimulate creativity by painting, exercising, or exploring.

Creating a space, such as trails, where people feel comfortable, can encourage them to reconnect with nature. The *American Psychological Society* study by Kaplan, Kaplan, and Ryan, supports the benefits of engagement with nature when they highlighted that nearby natural landscapes experienced in everyday situations can have a powerful effect on people's wellbeing.¹⁰⁵ Additionally, Dr. Howard Frumkin, also encourages opportunities for social gatherings in natural environments because it can provide an "...opportunity for people to be physically active and to mix with other people—also parts of a healthy, wholesome community."¹⁰⁶

This sense of community can also be influenced by space. Each interviewee said their museum had land in which they could utilize trails; however, Zacharias was the only one that said their site was particularly unique. Zacharias's site is unique in that it is situated on a nature preserve. However, Eccleston and Pasour said that their acreage was not uncommon for their respective locales of Arkansas and North Carolina.

¹⁰⁵ Rachel Kaplan, Stephen Kaplan, and Robert L. Ryan, "With People in Mind: Design and Management of Everyday Nature," *American Psychological Society*, (Washington, DC: Island Press, 1998), 26.

¹⁰⁶ Dr. Howard Frumkin, "Building Healthy Communities," http://www.cdc.gov/healthyplaces/cdc_healthy_community_design_webserver/cdc_healthy_community_design_transcript.pdf. May 16, 2008. (accessed April 16, 2015).

FORGING PARTNERSHIPS

When asked how urban museums can incorporate trails, especially those with inadequate space, each interviewee had valuable and creative suggestions. Eccleston and Pasour said that developing partnerships with the city and municipalities is invaluable. Zacharias suggested that if a museum lacks adequate space for trails, they should partner with nearby preserves, parks, or other public or private lands. He also said that if a partnership is formed, each partner could benefit by sharing the generated revenue and publicity.

The discussion of partnerships can also extend to funding. Each museum had various sources of funding, which is typical of many institutions; however, they each highlighted valuable sources of funding that could be beneficial. Eccleston said that Crystal Bridges partnered with local businesses that could benefit from an interconnected trail system and worked with the city to determine responsibility for construction and maintenance of the trails. He stated that this also contributed to a sense of ownership of the trails among the community. The Schiele museum is funded by city government, state funds, and grants; however, a mixture of those is allocated to the trails through basic maintenance and special projects. The Museum of Arts and Sciences reached out to donors and wrote grants to match donations. These funding sources can all be valuable avenues to pursue when forging partnerships in the community and contemplating incorporating trails.

PROVIDING AN EXPERIENCE

Eccleston and Zacharias said that their trails allow visitors to completely immerse themselves in the outdoors, which enables them to explore and engage with the landscape and reconnect with nature. According to Silverman, these experiences can encourage meaning

making and allow for more extensive learning.¹⁰⁷ By encouraging exploration and immersion, these museums have utilized a constructivist approach by allowing for the transformation of knowledge through active and original thinking.¹⁰⁸ This engagement with nature can also be beneficial, because in *The Human Relationship with Nature*, Kahn argues that children actively make meaning of their world by fully engaging with problems and issues that captivate them.¹⁰⁹ Additionally, Louv argues that many of today's children lack regular physical contact with nature, but they are more aware than any other generation of the global threats to the environment.¹¹⁰ Louv implies that, although they know about nature and environmental issues, they are not experiencing them. In Jay Rounds's article, *Meaning Making: A New Paradigm for Museum Exhibits?*, he asserts that traditional exhibit design has undermined the visitors' experience and that new approaches should be explored to more powerfully stimulate and support visitor meaning making.¹¹¹ The incorporation of nature trails is one way that museums can counter this lack of experience while exploring other avenues of interpretation. Additionally, by using trails to interpret the natural environment, museums can create dynamic exhibits to encourage meaning making and foster support for conserving natural resources, preserving biodiversity, and protecting habitats.¹¹²

¹⁰⁷ Lois H. Silverman, "Meaning Making Matters: Communication, Consequences, and Exhibit Design." *Exhibitionist* (Spring 2000): 12.

¹⁰⁸ Peter Kahn, *The Human Relationship with Nature: Development and Culture*, (Cambridge, Massachusetts: MIT Press, 1999), 214.

¹⁰⁹ Peter Kahn, *The Human Relationship with Nature: Development and Culture*, (Cambridge, Massachusetts: MIT Press, 1999), 214.

¹¹⁰ Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 1.

¹¹¹ Jay Rounds, "Meaning Making: A New Paradigm for Museum Exhibits?" *Exhibitionist* (Spring 2000): 8.

¹¹² Elia Ben-Ari, "Speaking for Nature," *BioScience* 50 (2000), 1.

PROVIDING ADDITIONAL GALLERY SPACE

Although to varying extents, each museum viewed their outdoor spaces and trails as an extension of their museums. Two of the three interview participants said that their outdoor space and trails allowed them to incorporate larger objects, such as statues and historic buildings, which would be difficult to include indoors. These two museums also stated that these spaces are viewed as a natural extension of their museums, and visitors are encouraged to explore. This could be a beneficial approach to diversifying museum experiences. In Chapter II, the benefits of biophilic architecture was discussed. By incorporating some of nature's awe-inspiring qualities into architecture and the built environment, an aesthetic alternative can be provided.¹¹³ In this way, one can trace the use of outdoor spaces to meet the needs of both users who want access to nature and exhibit designers who need extra space. Additionally, emotions, such as fascination and wonder, are known to improve functioning and lessen the impact of attention fatigue, a well-known hindrance in museums.¹¹⁴ This suggests that utilizing trails and outdoor spaces can provide a way to promote deeper learning.

INTERPRETATION OF THE NATURAL ENVIRONMENT

Each museum highlighted environmental issues their region faced, including: water conservation, sustainability, invasive species control, and benefits of native vegetation. They also highlighted local history related to human interaction with the environment by talking about historic uses of the land (Crystal Bridges), outdoor sites related to local history (the Schiele), and endangered ecosystems that have been protected by nature preserves for decades (Museum of Arts and Sciences). Each interviewee stated that their trails allowed for immersive, exploratory

¹¹³ Yannick Joye, "Can Architecture Become Second Nature? An Emotion-Based Approach to Nature-Oriented Architecture," In *Ecopsychology* ed. Peter H. Kahn, Jr. and Patricia Hasbach (Cambridge, MA: MIT Press, 2012), 198.

¹¹⁴ Yannick Joye, "Can Architecture Become Second Nature? An Emotion-Based Approach to Nature-Oriented Architecture," In *Ecopsychology* ed. Peter H. Kahn, Jr. and Patricia Hasbach (Cambridge, MA: MIT Press, 2012), 198.

exposure to the natural world. They also said that their trails provided an immersive experience in which their visitors could reconnect with nature and see flora and fauna in their natural environment. This aligned with Lois Silverman's argument, which suggested that museums have shifted toward experience-centered museums and have begun to explore the benefits of recreation, sociability, and enchanting experiences in order to foster learning.¹¹⁵ Creating immersive experiences also paralleled Jay Rounds's argument that new approaches, such as interpretive trails, could allow the visitor to be more powerfully stimulated and, in turn, make more meaning of their environment.¹¹⁶ According to Robin Moore, immersive experiences can also be essential for healthy child development because all the senses are stimulated and informal play can be integrated with formal learning.¹¹⁷ Moore goes on to argue that cognitive constructs are necessary for sustained intellectual development and can be created by multisensory experiences in nature that stimulate the imagination.¹¹⁸

Additionally, each interviewee encouraged museums to be creative with their outdoor spaces, and trails are a great way to interpret the outdoors and expand the reach and impact of the museum, especially if they have the means to do so. All three museums chose to highlight the importance of their native vegetation and local ecology through their trails. This is an important contribution to building ecological literacy and educating visitors about the native vegetation and the important role it plays in their unique ecosystems. As stated in Chapter II, museums can develop nature trails that incorporate native plants in order to promote awareness of environmental issues and equip visitors with the tools to combat environmental threats. Lastly,

¹¹⁵ Lois H. Silverman, "Meaning Making Matters: Communication, Consequences, and Exhibit Design." *Exhibitionist* (Spring 2000): 12.

¹¹⁶ Jay Rounds, "Meaning Making: A New Paradigm for Museum Exhibits?" *Exhibitionist* (Spring 2000): 8.

¹¹⁷ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 86.

¹¹⁸ Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin, 2005), 87.

Richard Louv's book, *Last Child in the Woods*, was very influential in the design of Crystal Bridges' trails, and his work was also well known at the Schiele.

INTERPRETIVE TECHNIQUES

Each museum utilized interpretative signage on their trails, but they also used unique interpretive devices. Crystal Bridges and MOAS used various forms of technology to supplement their interpretive signage, including a mobile application and audio content on a hand crank. Tours and interpretive brochures are also forms of interpretation that are used on the trails. In *Museums and the Environment*, AAM presented numerous suggestions on interpreting the environment.¹¹⁹ Some of these included sponsoring talks and nature walks to inform visitors of various topics, including uses of the forest, the balance of nature, and local ecosystems.¹²⁰ By using trails to interpret the natural environment, museums can create dynamic exhibits to encourage meaning making and foster support for conserving natural resources, preserving biodiversity, and protecting habitats.¹²¹

¹¹⁹ Ruth Norton Oliver, ed., *Museums and the Environment: A Handbook for Education*, (New York: Arkville Press, 1971), 26-28.

¹²⁰ Ruth Norton Oliver, ed., *Museums and the Environment: A Handbook for Education*, (New York: Arkville Press, 1971), 26-28.

¹²¹ Elia Ben-Ari, "Speaking for Nature," *BioScience* 50 (2000), 1.

CHAPTER VI: CONCLUSIONS & RECOMMENDATIONS

CONCLUSIONS

The goal of this study was to define and describe the phenomenon of urban museums that utilize trails to interpret their natural surroundings. The primary conclusion is that by utilizing trails to interpret their natural surroundings, museums can provide spaces that highlight the importance of native vegetation, educate their visitors about local ecosystems, and explain how these ecosystems apply to the larger realm of environmental issues.

RECOMMENDATIONS

This study generated six recommendations.

- Evaluations should be conducted on the trails to better assess two things: their effectiveness, and visitor perceptions of the utilization of interpretive trails by museums.
- Further research should be conducted to enrich this discussion and add to the body of literature.
- Museums should add more information on their websites regarding their trails so that they can be better utilized by their communities.
- Museums that are struggling with providing accessibility on their trails can create boardwalks that can be an alternative way to ensure accessibility while still allowing for a somewhat immersive experience.
- Museums interested in incorporating interpretive trails should consider forming partnerships within the community and municipalities to create trail systems that can better benefit their communities.

- Museums that are interested in incorporating interpretive trails but lack the space can partner with organizations and entities with more land and provide interpretation.

L I M I T A T I O N S

There were five main limitations to this study.

- The sample size was three museums; a larger sample size would have produced more data and might have produced more results.
- Each institution varied in age, location, funding, and genre; it could have been beneficial to compare institutions with more similarities.
- Each museum varied in locale, age, size, and native landscape and were faced with individual challenges and opportunities.
- Due to locations, site visits were not possible; firsthand knowledge and experience of these sites might have provided richer data.
- Visitor research would have provided more data that specifically related to visitor perceptions of the trails.

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APPENDIX A
INTERVIEW INSTRUMENT

Interview Instrument
Trailblazing the Concrete Jungle:
Museums Utilizing Interpretive Nature Trails in Urban Communities

Interview Questions:

Motivating Factors

1. What need in your community were you addressing by using trails to interpret your natural surroundings?
2. How did you come to the decision to incorporate interpretive trails?
3. What was the administrative process surrounding the decision?
4. Were there any references, literature, or other sources that informed the development of your trails?

Feasibility

5. Is your site unique in some way that allows you to have trails?
6. How should urban museums go about including trails?
7. How should museums do this if they have inadequate space?
8. How did you accumulate the funds to build trails?
9. What do interpretive trails allow you to do that an indoor exhibit could not?
10. Do you see interpretive trails as being a trend among museums? If so, where else are you hearing conversations about this interpretation professionally?

Impact and Visitor Research

11. What are your perceptions of the impact these trails have had on your visitors?
12. Was it something your visitors wanted?
13. How frequently are the trails visited?
14. What has the visitor response been to the trails?
15. As an institution, how do you define success of the trails with visitors?
16. Are you doing any formal evaluation/research with visitors?
17. Do you have formal outcomes for the trails? If so, what are they?

Interpretive Goals

18. What interpretive topics and content are represented in the trails?
19. To what extent are you trying to convey environmental issues through trails?