

“STUDY NATURE, NOT BOOKS”:
EDUCATION IN 19th CENTURY NATURAL HISTORY MUSEUMS

Ryan Horvath

A thesis
submitted in partial fulfillment of the
requirements for the degree of

Master of Arts

University of Washington

2012

Committee:

Wilson O'Donnell

Lorraine McConaghy

Nancy Beadie

Program Authorized to Offer Degree:

Museology

University of Washington

Abstract

“STUDY NATURE, NOT BOOKS”:
EDUCATION IN 19th CENTURY NATURAL HISTORY MUSEUMS

Ryan Horvath

Chair of Supervisory Committee:
Professor Wilson O’Donnell
Museology

This paper will examine three case studies, the Smithsonian Institution, the Museum of Comparative Zoology at Harvard, and the American Museum of Natural History; these museums represent the national, university, and city/state museum models respectively. This paper will look to address the effect that these three museum models had on educational philosophies and practices in natural history museums from 1846-1900. These museums were all major natural history museums founded during a time of great expansion in the role of public education. Natural history was a new field of instruction during this period and museums were at the forefront of educational methods used to effectively teach this subject.

A document analysis was performed on three different data sets for each museum: founding documents, annual reports, and personal papers and writings. Museums educated the public through three main avenues: systematic exhibits, performing normal school functions, and directly providing classroom instruction. The results of this study suggest that the national museum model was the least active educationally, the university museum model was the most active educationally, but focused primarily on their own students, and that the city/state museum model was responsive to public educational movements.

Table of Contents

LIST OF TABLES.....	II
LIST OF FIGURES	III
ACKNOWLEDGMENTS	IV
CHAPTER 1: INTRODUCTION.....	1
CHAPTER 2: REVIEW OF THE LITERATURE.....	3
THE THREE MUSEUM MODELS.....	3
BRIEF HISTORIES OF THE THREE MUSEUMS	4
<i>The Smithsonian Institution</i>	<i>5</i>
<i>The Museum of Comparative Zoology.....</i>	<i>6</i>
<i>The American Museum of Natural History.....</i>	<i>7</i>
HISTORIOGRAPHY.....	9
<i>Late 19th and early 20th Century</i>	<i>9</i>
<i>Mid-20th Century</i>	<i>13</i>
<i>Contemporary</i>	<i>15</i>
EDUCATIONAL HISTORY.....	17
<i>Educational Philosophies.....</i>	<i>18</i>
<i>Nature Studies.....</i>	<i>19</i>
CHAPTER 3: METHODS	21
DEFINING THE CASE STUDY	21
FOUNDING DOCUMENTS	23
ANNUAL REPORTS.....	23
PERSONAL PAPERS AND WRITINGS.....	24
CHAPTER 4: RESULTS & DISCUSSION.....	25
FOUNDING DOCUMENTS: RESULTS.....	25
FOUNDING DOCUMENTS: DISCUSSION	28
ANNUAL REPORTS: RESULTS	29
ANNUAL REPORTS: DISCUSSION.....	34
PERSONAL PAPERS & WRITINGS: RESULTS.....	35
PERSONAL PAPERS & WRITINGS: DISCUSSION	39
CONCLUSION	40
LIMITATIONS.....	41
RECOMMENDATIONS FOR FUTURE WORK	42
BIBLIOGRAPHY	43
PRIMARY SOURCES.....	43
SECONDARY SOURCES.....	43

List of Tables

Table 1 Smithsonian Institution Founding Documents Results.....	25
Table 2 Museum of Comparative Zoology Founding Documents Results	26
Table 3 American Museum of Natural History Founding Documents Results.....	27
Table 4 Annual Reports Results.....	30
Table 5 Personal Papers & Writings Results.....	36

List of Figures

Figure 1 Diorama of Elk Group, March 1914.....	12
Figure 2 Circulating Nature Study Collection showing Butterfly Group, August 1927.....	12

Acknowledgments

Above all, I need to thank and acknowledge Jennifer Montagne. She has supported and encouraged me along in this whole process. She has kept my work relevant and interesting to people other than myself.

Uncle Jimmy, my godfather, is the reason that I was able to write this thesis. I live in awe of the things that this man was able to accomplish and the effect that he had on every one around him. My parents, Beth and Peter, inspired me to pursue higher education, but also taught me that it is not everything. Thank you for all of your support and advise.

I also owe a deep debt of gratitude to my advisor Wilson O'Donnell. He has guided me along in this process. He pushed me to work to my potential and helped this paper become what it is now. I want to thank the rest of my committee who pointed me in the right direction and turned me on to great sources that this study would not have been complete without. I also must thank Kris Morrissey for handing me Stephen Conn's book after hearing my thesis proposal. His work was very influential in framing this topic.

I want to thank my undergraduate professors Tom Williams and Matt Osborn. They both supported my instinct to investigate museum history and were incredible mentors. They have been and continue to be sources of inspiration.

I also need to thank: Andy Bittner, the man who knows exactly how frustrating academia is, Eric LaPlant, Nick Black, and everyone here in Seattle and elsewhere that has kept me happy, healthy, sane, and honest during this process.

Chapter 1: Introduction

If you wish your schools of science and art to be effective, your health, the air, and your food to be wholesome, your life to be long, your manufactures to improve, your trade to increase, and your people to be civilized, you must have museums of science and art to illustrate the principles of life, health, nature, science, art, and beauty.

-Sir Henry Cole, 1874

Between 1846, when the Smithsonian Institution was created, and the turn of the century museums experienced what some historians have termed a “Gilded Age.”¹ This was a period in which many of this country’s museums were created and seems to mark the emergence of what can be seen as today’s modern museums. As will be discussed in the literature review, during the 19th century there were three models that museum conformed to at their creation: national model, university model, and the city/state model. Given this, how did a museum’s model affect their response to education?

Three museums were chosen as case studies of the three different museum models that existed at the time: the Smithsonian Institution (SI) in Washington, D.C. represents national museums, the Museum of Comparative Zoology at Harvard (MCZ) in Cambridge, Massachusetts represents university museums, and the American Museum of Natural History (AMNH) in New York City represents the city/state museum. Through the document analysis of three types of sources, each of these museums' response to education will be examined, in an attempt to understand how their model affected their response.

¹ Neil Harris, “The Gilded Age Revisited: Boston and the Museum Movement,” *American Quarterly* 14, no 4 (1962), 546-566.

A comprehensive history of American museums has not yet been written. Historian Steven Conn, the author of *Museums and American Intellectual Life, 1876-1926*, claims that while parts of American museum history have been studied, "...museums have received remarkably little historical treatment."² One claim that has been repeated by museum historians, especially of the Smithsonian, is that education was not one of a museum's traditional roles.³ However, this may not be true for all models of museums.

² Steven Conn, *Museums and American Intellectual Life, 1876-1926* (Chicago: University of Chicago Press, 1998), 10.

³ Charles Blitzer, "Preface," in *Museum and Education* ed. by Eric Larrabee (Washington: Smithsonian Institution Press, 1968), 29.

Chapter 2: Review of the Literature

The Three Museum Models

In 1912, professor and architect J. A. Udden compiled statistics on museums and the amount spent on construction of new museum buildings between 1840 and 1909 for the journal, *Science*, and showed that during that time, museums received \$37,232,000 for that purpose alone.⁴ The table below in the footnotes showed that the amount of funding spiked between 1870-1879 to an average of \$861,429 spent on construction per museum.⁵ He also identifies the sources of the funds that were spent on construction during this time.

Udden identifies four funding sources: private donors, universities, cities, and

⁴ J. A. Udden, "Museum Buildings in the United States," *Science* 36 no. 917 (1912), 110. An interesting side note about Udden is that he designed the original plans for the American Museum of Natural History that Albert S. Bickmore carried with him on his travels through Asia and Europe when the museum was still only a youthful ambition.

⁵ Money spent on New Museum Buildings, 1840-1909

Decade	Number of Museums	Amounts Received	Amount Per Museum
1840-1849	1	\$20,000.00	\$20,000.00
1850-1859	2	\$34,000.00	\$17,000.00
1860-1869	6	\$1,277,000.00	\$212,833.33
1870-1879	7	\$6,030,000.00	\$861,428.57
1880-1889	5	\$560,000.00	\$112,000.00
1890-1899	20	\$9,866,000.00	\$493,300.00
1900-1909	21	\$14,244,000.00	\$678,285.71
Unknown		\$5,221,000.00	

Source: Udden, Table I, "Museum Buildings," 110.

Notes: This data was originally collected and published in the Directory of American Museums by the Buffalo Society of Natural History. The final column shows the average spent per museum.

state/national. Notably, he combines state and national government. National funding can also be seen as a separate source from states since there were only a few national museums.⁶

According to William Stanley Jevons, the British philosopher and economist, the main goal of a national museum must be, "...the advancement of knowledge," so education must take a natural backseat to issues of greater national importance.⁷ At the university level, the focus in education was to give their students the best possible education and to give their faculty the best resources for this purpose.⁸ The interaction with education at the city and state levels was the most complex. States mandated certain aspects of free public education. Cities also took a strong interest in education because it was seen as having a civilizing effect on immigrant populations.⁹

Brief Histories of the Three Museums

This section will discuss some of the landmarks for the three institutions in question. It will also give some background into the founding of these organizations.

⁶ Source of Funds for New Museum Buildings

Source of Funds	Number of Museums	Amounts Received
Private Donations	36	\$18,958,000.00
Universities (indirectly some states)	15	\$1,382,000.00
Cities	10	\$8,599,000.00
State and national governments	3	\$7,350,000.00
Other sources	1	\$943,000.00

Source: Udden, Table II, "Museum Buildings," 110; *Report of the Board of Regents of the Smithsonian Institution, showing the Operations, Expenditures, and Condition of the Institution for the year 1865* (Washington: Government Printing Office, 1866), 60. Joseph Henry lists a few national museums other than the Smithsonian.

⁷ William Stanley Jevons, "The Use and Abuse of Museums," in *Methods of Social Reform: and Other Papers* (London: MacMillan and Company, 1883), 75.

⁸ Edward Lurie, *The Founding of the Museum of Comparative Zoology* (Cambridge: Harvard Press, 1959), 35.

⁹ Marjorie Schwarzer, *Riches, Rivals & Radicals: 100 Years of Museums in America* (Washington D.C.: American Association of Museums, 2006), 8.

The Smithsonian Institution

In 1829, James Smithson died in Genoa, Italy and six years later his nephew, and only heir, died leaving Smithson's estate of \$550,000, "...to the United States of America, to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men."¹⁰ Those famous words, "...the increase and diffusion of knowledge among men," have always been at the center of the Smithsonian's operations. The bequest of James Smithson was hotly debated for years in Congress, there were many competing views of how what the institution should look like. There were suggestions for a national university, astronomical observatory, and many others.¹¹ The bill that eventually passed, and created the SI on August 10, 1846 was "An Act to Establish the Smithsonian Institution for the Increase and Diffusion of Knowledge Among Men."

An American scientist, Joseph Henry, was appointed the first Secretary of the Smithsonian. He served as secretary from 1846-1878. In 1850, he hired an Assistant Secretary to run the museum and natural history collection, Spencer Baird.¹² Baird hired George Brown Goode as his assistant in 1876. Baird became the second Secretary of the SI upon Henry's death in 1878, and Goode became his Assistant Secretary. The third Secretary was Samuel Pierpont Langley who served from Baird's death in 1887 until 1906. Goode served as the Assistant Secretary until his death in 1896.¹³

¹⁰ Webster P. True, *The First Hundred Years of the Smithsonian Institution 1846-1946* (Washington: The Smithsonian Institution, 1946), 2.

¹¹ Paul H. Oehser, *The Smithsonian Institution* (Washington: Praeger Publishers, 1970), 19.

¹² *Annual Report 1858*, 40-42.

¹³ "Secretaries of the Smithsonian," The Smithsonian Institution.
<http://siarchives.si.edu/history/secretaries-smithsonian>

The Smithsonian's museum was housed in the "Castle" until 1881 when the new museum building was completed. When the funding was first approved for the construction of this building, now the Arts and Industry Building, it was the first time that the SI was officially referred to as the "United States National Museum."¹⁴

The Museum of Comparative Zoology

Louis Agassiz, the Swiss geologist famous for his theories of Ice Ages, crossed the Atlantic in 1846 to conduct research in America and ended up settling in Cambridge, Massachusetts where he was appointed a professor of zoology and geology at Harvard University. While at Harvard, he developed an extensive personal collection of natural history specimens. As the head of Harvard's Lawrence Scientific School, he felt that the collection would find better use as a part of the school. In 1853, he donated it to Harvard; his collection was the nucleus of what would become the Museum of Comparative Zoology.¹⁵

The MCZ was founded, at least in part, through bequest. In the case of the MCZ, it was the \$50,000 bequest of Francis C. Gray. This bequest had some stipulations that would shape the course of the museum's educational mission. The most important of these stipulations was that none of the money from it could be spent on either salaries or buildings.¹⁶ The bequest did not specify that the money would necessarily go to Harvard. Harvard would only receive the funds if they provided a fireproof building and if the university would pay the director and any other staff.¹⁷

¹⁴ Ellis L. Yochelson, *The National Museum of Natural History: 75 Years in the Natural History Building* (Washington: Smithsonian Institution Press, 1985), 9.

¹⁵ Lurie, *Founding of the Museum*, 13.

¹⁶ *Charter of the Museum of Comparative Zoology with a List of Trustees, the By-laws, and Other Papers* (Boston: William White, 1859), 12.

¹⁷ *Charter of the Museum*, 24.

In order to get funding for the building, Harvard turned to the Commonwealth of Massachusetts. The state was preparing to sell a tract of state land in the Back Bay area of Boston. The funds from the sale of the land were to be used to fund common and normal schools across the state as well as several higher educational institutions. “An Act to Increase the School Fund, and to grant aid to the Museum of Comparative Zoology, Tufts, Williams and Amherst Colleges, and the Wesleyan Academy at Wilbraham, out of the Proceeds of the Sales of the Back Bay Lands,” was passed on April 2nd, 1859, and a full twenty percent of the funds, not to exceed \$100,000, was given to the MCZ.¹⁸ This was twice the amount that any other private institution received from the sale of Back Bay. This money was to be put directly to the, “...erection, maintenance, and support of a Museum of Comparative Zoology.”¹⁹

With funding in place for both a collection and building, the Museum of Comparative Zoology was incorporated on April 6th, 1859.²⁰ Louis Agassiz would serve as its Director until his death in 1873. At that time, his son took over as Director and served until his death in 1910.

The American Museum of Natural History

In 1868, Albert Smith Bickmore, a former professor, sent a letter to the Commissioners of the New York Central Park stating the desire of “a number of gentlemen” to establish “a great Museum of Natural History...in the Central Park,” and asked if the Commission could provide for a space to hold the collection.²¹ This letter set in motion the

¹⁸ *Charter*, 7.

¹⁹ *Charter* 13.

²⁰ *Ibid.*, 5.

²¹ American Museum of Natural History, *First Annual Report: 1869* (New York: American Museum of Natural History, 1870), 17.

Act to Incorporate the American Museum of Natural History that was passed by the state legislature on April 6th, 1869.

The Trustees and Officers listed in the *First Annual Report* of the American Museum of Natural History were among the wealthiest of New York City. The list includes names like: Theodore Roosevelt Sr., A.G. Phelps Dodge, John David Wolfe, Morris K. Jesup, Robert Colgate, and J. Pierpont Morgan.²² Of the \$52,000 contributed by citizens to the establishment of the museum, Bickmore personally raised \$45,000 through a vigorous letter writing and solicitation campaign.²³ For the first few years, the AMNH existed in the second and third floors of the Arsenal Building on the South Side of Central Park, but in a short time this building became too small for the growing collections. In 1870, the Board of Trustees applied to the city for funds, \$500,000, to construct a building specifically for the purposes of the museum with assistance from the city.²⁴ The new building on 77th Street and Central Park West opened on December 22nd, 1877 with much fanfare; much of New York's elite was in attendance as well as President Rutherford Hayes.²⁵

The first president of the Board of Trustees was John David Wolfe. He held the position until his death in 1872. At that time, Robert L. Stuart became the second President until his death in 1881. Morris K. Jesup then became the President until his death in 1908. Bickmore was the Superintendent (the top staff position) from its start until 1884, when he resigned to form the museum's Department of Public Instruction.

²² Ibid., 3.

²³ Hellman, *Bankers, Bones, & Beetles*, 21; *First Annual Report*, 29. In the *First Annual Report* it shows that he received \$450 for "Commission on Subscriptions obt'd by him".

²⁴ *Second Annual Report*, 13.

²⁵ Albert S. Bickmore, "*An Autobiography with Historical Sketch of the Founding and Early Development of the American Museum of Natural History*" (Vol. 2, American Museum of Natural History, 1908), 50-51.

Historiography

The view of education in American museums has gone through three phases since the late 19th century. The first of these three eras lasts until the middle of the 20th century. The beginning of the second era is marked by a renewed interest in the museum as an educational institution in the 1960's.²⁶ The third era is of more contemporary work within the last 20 years.

Late 19th and early 20th Century

During the late 19th century museums were defining themselves as either *research* or *educational* museums. George Brown Goode stated that the defining characteristic of an *educational* museum is that an, "...attempt is made to teach the unprofessional visitor ... popular education."²⁷ In other words, an educational museum must be aimed at the broader, nonscientific public.

A *research* museum is an institution in which exploring the unknown, "...must be the passion that dominated all and on which the functions of conservation and education depend."²⁸ In this type of museum, the importance is put on producing new knowledge, not educating visitors. According to historian David Murry, general public instruction is directly at odds with scientific research.²⁹

The Smithsonian and the MCZ both wished to rigidly define themselves as *research* museums.³⁰ The Smithsonian, defined itself as a *research* museum by mounting expeditions

²⁶ *Museum and Education* ed. by Eric Larrabee (Washington: Smithsonian Institution Press, 1968).

²⁷ George Brown Goode, *The Origins of Natural Science in America: The Essays of George Brown Goode*, ed. Sally Gregory Kohlstedt (Washington: Smithsonian Institution Press, 1991), 309.

²⁸ Henry Allen Moe, "The Role and Obligations of Museums as a Scholarly Resource," in *The Museum and Education* ed. Eric Larrabee (Washington: Smithsonian Institution, 1968), 30.

²⁹ David Murry, *Museums, Their History and Their Use* (New York: MacMillan & Company, 1904), 277.

³⁰ Murry, *Museums*, 274.

and by allowing any researcher with the proper qualifications to access, or even borrow, their collections.³¹ The MCZ was focused on educating professionals and providing resources for Harvard's faculty and students to conduct their research. The American Museum of Natural History (AMNH) falls into the other category; its main focus was on public education from the very start.³²

In the late 19th and early 20th centuries, there was some study of the educational practices in museums. The most widely accepted and utilized practice was the systematic arrangement of objects in their taxonomy.³³ David Murry, in his book *Museums, Their History and Their Use*, believed that this type of exhibit was critical to the role that museums must play. The idea behind the systematic taxonomical displays was that museums must be used in order to train students, "...to observe just as they are taught to cypher or to swim."³⁴ A central purpose for museums was to serve as the classroom's link to nature.³⁵ As a result of this purpose, it was necessary for museums to have, "...larger and more general collections," so that they could serve a role that he believed schools could, or should, not try to fill.³⁶ However, he did see habitat displays as the way of the future. He believed that these types of exhibits would serve to condense the work of professional naturalists so that visitors, who would otherwise be unable to see these settings naturally, could.³⁷ He was also excited about

³¹ *Annual Report of the Board of Regents of the Smithsonian Institution, showing the Operations, Expenditures, and Condition of the Institution for the Year 1850*, (Washington: Government Printing Office, 1851), 25.

³² American Museum of Natural History, *First Annual Report: 1869* (New York: American Museum of Natural History, 1870), 10.

³³ Jevons, "Use and Abuse," 60.

³⁴ Murry, *Museums*, 259.

³⁵ Murry, *Museums*, 259.

³⁶ Murry, *Museum*, 261

³⁷ *Ibid.*, 263.

the practice of teachers taking their students on tours of the local museum, but warned of their use as a reward or for entertainment.³⁸

However, some thinkers at the time claimed that the practice of systematic collections in museums was detrimental to interest. Economist and logician William Stanley Jevons began to, "...question altogether the wisdom of forming vast collections for popular and educational purposes."³⁹ His problem with taxonomical displays was that long rows of glass cases full of objects, or specimen, would, instead of evoking awe and interest, create a sense of "perplexity and vagueness," leaving the visitor disenchanted.⁴⁰ His solution was to embrace the growing movement of habitat groupings and to display a few choice specimens from each genus so that the visitor could study each specimen closely.⁴¹ Habitat grouping or dioramas, such as the one pictured in Figure 1 (see page 12) were meant to imitate the natural environment of the animal.

Jevons firmly believed that museums must play a central role in education, because to him, observation was more effective than "senseless verbal teaching."⁴² He believed that it must be done on a small scale, by handling individual objects, not by viewing a full taxonomy. However, Jevons' praised the distribution of museum exhibit cabinets to public schools. Figure 2 (see page 12) shows an example classroom exhibit cabinet. He thought that this practice was essential for instruction in the natural sciences.⁴³

Emerging from the 19th century, two major museum educational philosophies collided. The older way of thinking, supported by Murry and Goode, defended the existing

³⁸ Ibid., 261.

³⁹ Jevons, "Use and Abuse," 60.

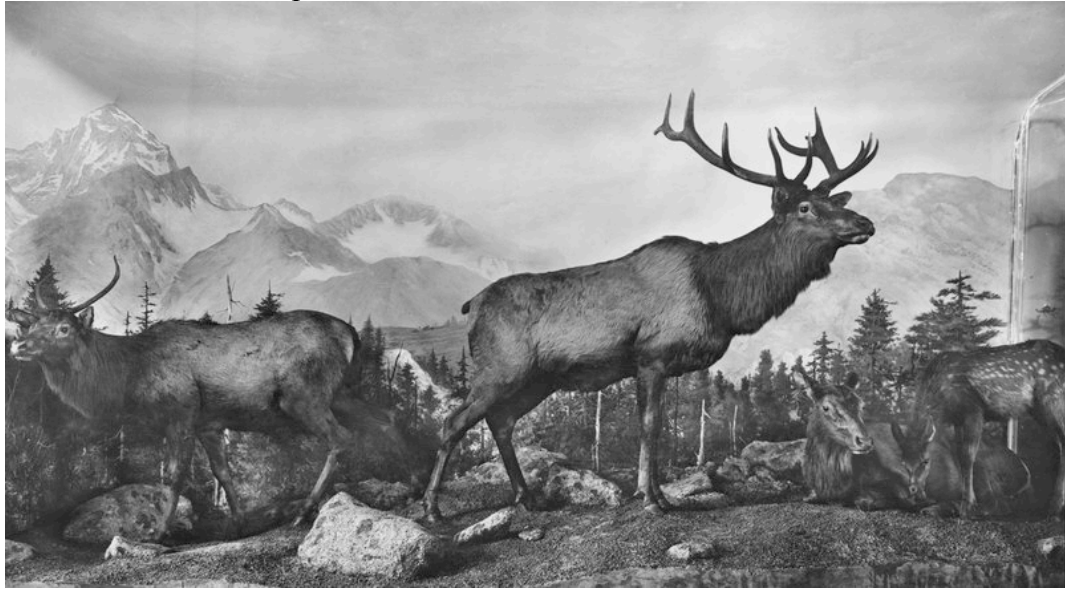
⁴⁰ Jevons, "Use and Abuse," 60.

⁴¹ Ibid., 62.

⁴² Ibid., 64.

⁴³ Ibid.

Figure 1 Diorama of Elk Group, March 1914



Source: American Museum of Natural History Research Library, Photo Collection, 34307.

Figure 1 Circulating Nature Study Collection showing Butterfly Group, August 1927



Source: American Museum of Natural History Research Library, Photo Collection, 311981.

method of full taxonomical displays. While on the other side, thinkers like Jevons thought that taxonomical displays were damaging over all and pushed habitat, or diorama displays exclusively. Although Murry did support the use of habitat displays, he believed that the taxonomical display played an important role.

Mid-20th Century

In August 1966, the Smithsonian Institution held a Conference on Museums and Education in Burlington, Vermont that resulted in *Museums and Education*, a volume containing a wide range of essays on the state of education in museums past, present and future. This compendium asserted that, “Our museums’ commitment to teaching constitutes a real change in their traditional role.”⁴⁴ Furthermore, the work stated that in the 19th century, museums assumed that visitors were self-motivated to learn and that a simple display of materials would suffice for their needs.⁴⁵

Setting the tone for the compilation in the “Introduction,” the Secretary of the Smithsonian, S. Dillon Ripley, wrote that museums were not a place for education, but for exposure.⁴⁶ His reasoning was that, “Education – that is, pedagogy, as it is largely thought of today – exists as a function of teaching.”⁴⁷ Ripley gave not only a conservative definition of education, but also defined the museum as, “... a sylvan grove to which scholars repaired, there to conduct research, amid discourse and with reference to books or to objects.”⁴⁸ He repeatedly stated that his beliefs were based on Joseph Henry’s idea of what the Smithsonian

⁴⁴ Charles Blitzer, “Preface,” in *Museum and Education* ed. by Eric Larrabee (Washington: Smithsonian Institution Press, 1968), v.

⁴⁵ Blitzer, “Preface,” v.

⁴⁶ S. Dillon Ripley, “Introduction,” in *Museum and Education* ed. by Eric Larrabee (Washington: Smithsonian Institution Press, 1968), 1.

⁴⁷ Ripley, “Introduction,” 1.

⁴⁸ *Ibid.*, 3.

should look like. He did, however, believe in some educational programs, such as lectures, docent tours, and traveling classroom exhibits.⁴⁹

Edgar P. Richardson, an art historian and director of the Henry Francis Winterthur Museum in Delaware, posited that the biggest challenge facing museums in aiding education was the teachers. His belief was that they were trained sufficiently to teach from books, but not from objects.⁵⁰ He fell into the same camp as Ripley who believed that the main educational responsibility of museums was exposure. Instead of any concrete educational responsibilities, Richardson felt that the role of museums was to train people to “...understand the complex & wonderful civilization they have inherited,” and, “to understand the world around them.”⁵¹ According to Richardson, a museum’s fundamental intellectual importance was to serve as a massive collection of original evidence.⁵²

Henry Moe Allen, the Chairman and President of the New York State Historical Society, shared Richardson’s view that historically, research had been the primary goal of museums. His main argument drew its roots back to what was considered to be the most renowned institution of the classical world, the Mouseion of Alexandria, which was founded c. 280 bce and was possibly the root of the word museum.⁵³ According to Allen, the Mouseion of Alexandria, “...was a research center, and only peripherally a center for teaching.”⁵⁴ His definition of teaching in this context only applies to what would now be considered higher education.⁵⁵

⁴⁹ Ibid., 4.

⁵⁰ Richardson, “The Museum and Education,” 14.

⁵¹ Ibid., 14-15.

⁵² Ibid., 13.

⁵³ Jeffery Abt, “The Origins of the Public Museum,” in *A Companion to Museum Studies* ed. by Sharon Macdonald (Oxford Blackwell Publishing Ltd, 2006), 116

⁵⁴ Henry Moe Allen, “The Role and Obligations of Museums as a Scholarly Resource,” in *Museum and Education* ed. by Eric Larrabee (Washington: Smithsonian Institution Press, 1968), 29. Allen, on page 33, puts

The belief among mid-20th century scholars was that if an object was displayed, classified, and labeled throughout the 19th century, then the museum felt that it had fulfilled its educative purposes.⁵⁶ The claim made by Ripley, that teaching was not a museum's "...traditional role," reflects the entire field's opinion at the time.⁵⁷ They also addressed what problems museum education should address, such as teaching teachers how to use objects for lessons. When they mentioned taxonomical displays, they were discussed as either purely scientific practices, or as a hindrance to education, not as an effective method of instruction.⁵⁸

Contemporary

Barbara Franco in the Introduction to *Patterns in Practice* openly addressed the duality that existed in museums between preservation and education, or the expert and the public.⁵⁹ Because of this duality, museum education was torn in many directions from the very start. Janet W. Solinger, the editor of *Museums and Universities: New Paths for Continuing Education*, also admitted that the divisions between scholarship and the public have always existed in museums and there was a great difference between "...those who merely visit" and "...those who are being educated there."⁶⁰

forward the reasonable request to, "...reserve block of rooms in the nether regions – the most uncomfortable rooms there are in hell – for those who use the word *museology*."

⁵⁵ Allen, "The Role and Obligations," 29.

⁵⁶ Edgar P. Richardson, "The Museum and Education," in *Museum and Education* ed. by Eric Larrabee (Washington: Smithsonian Institution Press, 1968), 16.

⁵⁷ Charles Blitzer, "Preface," in *Museum and Education* ed. by Eric Larrabee (Washington: Smithsonian Institution Press, 1968), v.

⁵⁸ Edward P. Alexander, *Museums in Motion: An introduction to the History and Functions of Museum* (Nashville: AALSH, Press, 1979), 57.

⁵⁹ Barbara Franco, "Evolution of the Field: Historical Context," in *Patterns in Practice: Selections from the Journal of Museum Education* (Washington: Museum Education Roundtable, Incorporated 1992), 9.

⁶⁰ Janet W. Solinger, "Museums and Universities: Choices," in *Museums and Universities: New Paths for Continuing Education*, ed. by Janet W. Solinger (New York: Collier Macmillan Publishers, 1990), 4.

Steven Conn's 1998 book, *Museums and American Intellectual Life, 1876-1926*, presented an in-depth study of the effect of all types of museums on American culture. His perspective on educational goals of 19th century museums was very different from the mid-20th century idea that museums felt their educational duty to the public was fulfilled if their objects were displayed, classified, and labeled. He pointed out that while the vast majority of intellectuals saw museums as a place where the creation of new knowledge would occur, a great many others saw the museum as a, "...democratically accessible, publically funded," alternative to the restrictive nature of universities.⁶¹ Conn claimed that Charles Peale believed that museums were important because they could show the results of their research and because of that "... should perform a vital educational function for a democratic citizenry."⁶²

Museums of the 19th century offered lectures as well as small classroom exhibits that could be loaned out to schools. Although lectures were at the time a major form of popular entertainment, museums offered them to inform the listener by presenting new research.⁶³ Another central concept of museum education was to instruct the visitor on how to read objects. Part of this reasoning was based on the idea that "...objects, not books would yield new knowledge" and that observation was a better way to learn than by rote memorization.⁶⁴ The turning away from rote memorization as a teaching method was one part of the educational reform that was taking place in America during the second half of the 19th century.⁶⁵

⁶¹ Conn, *Museums*, 15-16.

⁶² *Ibid.*, 37. Charles Willson Peale is most famous for founding one the first American museums in 1786.

⁶³ *Ibid.*, 66.

⁶⁴ Conn, *Museums*, 59; *Ibid.*, 15.

⁶⁵ Sally Gregory Kohlstedt, *Teaching Children Science* (Chicago: The University of Chicago Press, 2010), 27.

The more contemporary historical views of museum education history show the complex landscape of education in museums. Solinger and Franco's claim that there is an apparent duality in museums, between the expert and the public, is similar to the conflict between *education* and *research* museums that Goode addressed. Conn's work puts taxonomical arraignment exhibits in a 19th century perspective; he claims that the Victorian fascination with, and faith in, objects was the "heart" of museums.⁶⁶ Not only were objects viewed as sources of new knowledge, but also their systematic arrangement was necessary to extract meaning.⁶⁷

Educational History

To understand what was happening in museum education it is necessary to know what was happening in the broader field of American education and educational theory during the 19th century. According to historian Carl Kaestle, two major changes that occurred in public education in the Northeast United States before the Civil War were the beginning of the normal school systems and the creation of statewide school systems.⁶⁸

A normal school is any institution involved in the education of teachers. The first state-run normal school was founded in Massachusetts in 1839.⁶⁹ By 1890, there were 103 state-run normal schools in 35 of the 44 states.⁷⁰ The normal school movement evolved out of a desire to professionalize standards for teachers.⁷¹ According to historian Christine Ogren, there was some direct crossover in service between museums and normal schools. In

⁶⁶ Conn. *Museums*, 9.

⁶⁷ *Ibid.*, 23.

⁶⁸ Carl F. Kaestle, *Pillars of the Republic: Common Schools and American Society, 1780-1960* (New York: Hill and Wang, 1983), ix.

⁶⁹ Christine A. Ogren, *The American State Normal School: An Instrument of Great Good* (New York: Palgrave Macmillan, 2005), 1.

⁷⁰ Ogren, *Normal School*, 2.

⁷¹ Ogren, *Normal School*, 10-11.

1865, the Museum of Natural History at the State Normal University in Illinois had each of the teachers they were training do original research using their collections on the natural history of their home district.⁷² In the 1860's, some normal schools were requiring the teaching of some fields of natural history, typically geography. By the 1870's, nearly all normal schools required future teachers to study, "...physiology, botany, geography, and natural history of natural philosophy."⁷³ These courses were designed to, "...train the powers of observation, and produce habits of independent thought."⁷⁴ Ogden makes the claim that it was not unusual for normal schools to have their own museum in order to aid their study of zoology.⁷⁵

The states also began to create common schools. Common schools can be defined as tax supported elementary schools.⁷⁶ The expansion of common schooling and museums are linked in a significant way; they were, in part, products of the rapid expansion of capitalism and urbanism.⁷⁷ There was also a growing movement to educate morality and train citizens.⁷⁸

Educational Philosophies

An important part of understanding the changes that were taking place in American education is to look at the prominent educational philosophies at the time. One of the more relevant theorists to this study was the German educational reformer, Johann Friedrich Herbart. Herbart was a teacher before he conducted his work on educational philosophy, under the guidance of educational philosopher Johann Heinrich Pestalozzi, and because of his position in the field, his theories on education proved to be some of the most insightful of

⁷² Ibid., 48.

⁷³ Ogden, *Normal School*, 47 and 93.

⁷⁴ Ibid., 93.

⁷⁵ Ibid., 96.

⁷⁶ Kaestle, *Pillars*, ix.

⁷⁷ Kaestle, *Pillars*, 70.

⁷⁸ Kaestle, *Pillars*, 67.

the time.⁷⁹ Herbart opened his essay with a sweeping proclamation that, “The one and the whole work of education may be summed up in the concept – Morality.”⁸⁰ According to Herbart, moral character lies between desire, or interest, and action; and that actions come from desire, formed by both sensual and intellectual interests.⁸¹ It is the intellectual interests that form individual character and that can be taught.

One of his theories that affects museums was his concern that it is extraordinarily easy, in the pursuit of “scientific unity,” to force objects into false connections with each other because they are lying side by side.⁸² To Herbart, interest was one of the main goals of a teacher, because many interests in an individual give that individual a more moral character. He believed that, “Interest arises from interesting objects and occupations. Many-sided interest originates in the *wealth* of these.”⁸³ Herbart’s theories require that all instruction must be manifold and that lessons should attempt to excite the listener and shake them out of passivity.⁸⁴ Herbart wrote extensively on teaching methods as well as theory. He gave very specific instruction on how to teach math, literature, and history but little on natural history. His guidelines for teachers suggest that they should practice field collection so that students may learn by observation.⁸⁵

Nature Studies

⁷⁹ Johann Friedrich Herbart, *The Science of Education: Its General Principles Deduced from its Aim and the Aesthetic Revelation of the World*, trans. Henry M Felkin and Emmie Felkin (Boston: D.C. Heath & Company, 1895), 1.

⁸⁰ Herbart, *Science of Education*, 57.

⁸¹ *Ibid.*, 209-210.

⁸² *Ibid.*, 107.

⁸³ *Ibid.*, 120.

⁸⁴ *Ibid.*, 109.

⁸⁵ Johann Friedrich Herbart, *Letters and Lectures on Education*, trans. By Henry M. Felkin and Emmie Felkin (Syracuse: C.W. Bardeen, 1898), 246-248.

Herbart's suggestion of teaching students in the field evolved into the nature study movement. Science historian Sally Gregory Kohlstedt in her book, *Teaching Children Science*, claimed that, "The nature study movement introduced science into public schools of North America."⁸⁶ A teacher that was using nature study curriculum would teach using natural objects either out in the field or in the classroom.⁸⁷ Nature study was a natural partner for museums; some teachers started small museums at local parks.⁸⁸

According to Kohlstedt, Louis Agassiz and his family were great proponents of teaching using objects, or specimens, and they formed part of the intellectual underpinning of the movement.⁸⁹ The movement's leadership, when it was being written into curriculum, was found in normal schools because of the additional training and time that it took to use nature study in the classroom.⁹⁰ The MCZ was an example of nature study being brought to higher education.⁹¹

⁸⁶ Kohlstedt, *Teaching Children*, 1.

⁸⁷ Kohlstedt, *Teaching Children*, 1.

⁸⁸ *Ibid.*, 8

⁸⁹ *Ibid.*, 1, and 11.

⁹⁰ *Ibid.*, 229.

⁹¹ *Ibid.*, 20.

Chapter 3: Methods

To gather data for this study, three types of sources will be used: founding documents, annual reports, personal papers and writings of people directly involved in the museums' educational programs. Document analysis will be undertaken for each of the three data sources.

Defining the Case Study

There were three criteria used for selecting the museums for this case study. These criteria served to narrow the field of inquiry. The three criteria that each museum met were: first, they were a natural history museum; second, they were a major institution; and third, they had a funding system and chartering agency that placed them into one of the museum models previously discussed.

The Smithsonian Institution, the Museum of Comparative Zoology, and the American Museum of Natural History are all natural history museums. They all fit Alexander's definition of a 19th century natural history museum by being centers for several natural sciences: geology, paleontology, biology, zoology, anthropology, and more.⁹² All three institutions also claimed to be natural history museums in their annual reports.

These three museums are also all major institutions. For the purpose of this study, a major institution is defined as a museum that still exists today, is specifically cited by

⁹² Alexander, *Museums in Motion*, 41.

museum historians as being important, and has significant publications about them. The second and third criteria for being a major institution are revealed in each museum's history in the literature review.

The third criterion for selecting the case studies is that each museum model must be represented. Each museum's funding source and what level of government they were chartered by determines their model. The Smithsonian was created by an act of Congress and a bequest given to the United States Federal government, thus following the national model.⁹³

The Museum of Comparative Zoology was chartered by the state of Massachusetts and received funds from the state, but the bequest of William Gray gave Harvard \$50,000 to increase the collection of the museum and Harvard was responsible to pay the curator.⁹⁴ While both the university and the state provided funding, the university model was firmly established by an agreement between MCZ and Harvard in which the Curator of the museum was also to be the head of the Lawrence Scientific School.⁹⁵

The American Museum of Natural History was chartered by the state of New York.⁹⁶ The museum was also granted the use of buildings and land by the Commissioners of Central Park, a department of New York City government.⁹⁷ While much of the funding for the

⁹³ An Act to Establish the Smithsonian Institution for the Increase and Diffusion of Knowledge Among Men, 29th Cong., 1st sess. (August 10, 1846).

⁹⁴ *Charter of the Museum of Comparative Zoology with a List of Trustees, the By-laws, and Other Papers* (Boston: William White, 1859), 6.

⁹⁵ *Charter of the Museum*, 16.

⁹⁶ American Museum of Natural History, *First Annual Report* (New York: American Museum of Natural History, 1870), 10.

⁹⁷ American Museum of Natural History, *First Annual Report*, 10.

museum was from private sources, the state provided \$500,000 to construct a permanent building for the museum.⁹⁸

Founding Documents

The two founding documents for the Smithsonian Institution are “An Act to Establish the Smithsonian Institution for the Increase and Diffusion of Knowledge Among Men,” and Joseph Henry’s, “Programme of Organization.” The MCZ has three founding documents. The first two, “An Act to Incorporate the Trustees of the Museum of Comparative Zoology” and “An Act to Increase the School Fund, and to grant aid to the Museum of Comparative Zoology, Tufts, Williams and Amherst Colleges, and the Wesleyan Academy at Wilbraham, out of the Proceeds of the Sales of the Back Bay Lands,” are legal actions by the state of Massachusetts. The third founding document, the “Articles of Agreement,” is between the MCZ and Harvard. The AMNH has two founding documents, “An Act to Incorporate the American Museum of Natural History,” and correspondence with the “Office of the Board of Commissioners of the Central Park, New York.”

These sources will be analyzed to see if education was a valued objective. Three criteria will be considered: 1) is there a clearly stated education mission, 2) is education valued over research, and 3) is there a definition of education.

Annual Reports

The Smithsonian’s annual reports were originally titled, *Annual Report of the Board of Regents of the Smithsonian Institution, showing the Operations, Expenditures, and Condition of the Institution*. This report covered all of the SI operations. In 1886, the museum

⁹⁸ American Museum of Natural History, *Second Annual Report* (New York: American Museum of Natural History, 1871), 8.

began to publish the *Report of the United States National Museum, Under the Direction of the Smithsonian Institution* as its annual report. The Museum of Comparative Zoology's report was the *Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College to the President and Fellow of Harvard College*. The American Museum of Natural History's report was *The Annual Report of the American Museum of Natural History*.

These sources will be analyzed to identify the education efforts that the museum put in place. Six criteria will be considered: 1) does the museum offer lectures, 2) does the museum offer direct education, 3) do they make classroom exhibits, 4) does the museum serve a normal school function, 5) are there specific plans for how to make exhibits educational, and 6) is there an education department.

Personal Papers and Writings

Three personal papers/writing sources will be analyzed: “An Autobiography with Historical Sketch of the Founding and Early Development of the American Museum of Natural History” by Albert S. Bickmore for the AMNH, lectures by Assistant Secretary George Brown Goode for the SI, and *The Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College to the President and Fellow of Harvard College's Curator's Report* by Louis Agassiz for the MCZ. The MCZ annual reports contain many of Agassiz's personal beliefs and motivations that would not be captured in the data analysis for the annual reports. This data will be used for his personal writings.

These sources will be analyzed to identify personal philosophies of the people in charge of these museums. Two criteria will be considered: 1) what did they value most in museums, and 2) did they have specific methods for museum education.

Chapter 4: Results & Discussion

Founding Documents: Results

The three criteria previously discussed in Chapter 3 require some further definition, before any analysis is attempted. The first of these three criteria is fairly straightforward: if a mission of the museum includes the words “education” and/or “instruction,” then it will have met the criteria. For the second, a word count will be performed to determine a value for education relative to research. If the words “education,” “teach,” or “instruction” are used more than “study,” “science,” or “research,” than this criteria will be met. The third criteria will be met if the audience that they will educate is identified (i.e. students, teachers, professionals, children, etc.). Tables 1, 2, and 3 show the results of the document analyses.

Table 1 Smithsonian Institution Founding Documents Results

	An Act to Establish	Programme of Organization
Is there a clearly stated education mission?	No	No
Is education valued over research?	No	No
Is there a definition of education?	No	No

Sources: “An Act to Establish the Smithsonian Institution for the Increase of Diffusion of Knowledge Among Men”; and “Programme of Organization.”

There was no direct evidence in the Smithsonian Institution’s founding documents that indicated that they valued education, had an educational mission, or defined education. The “Act to Establish the Smithsonian Institution,” does state that the SI was to be, “An establishment for the increase and diffusion of knowledge among men.”⁹⁹ While the word, “diffusion,” is outside of the scope of this analysis, it deserves further investigation. It is unclear what the term “diffusion” means in this context. Joseph Henry’s “Programme of Organization” defines what the two missions of the SI mean to him. The first objective, the increase of knowledge, is to enlarge the existing stock of knowledge by the addition of new truths; and the second objective, the diffusion of knowledge, is to disseminate that knowledge among men.¹⁰⁰ To Henry, the mission to “diffuse” means to “disseminate.” To this end, he identifies only one method, “...the press.”¹⁰¹

Table 2 Museum of Comparative Zoology Founding Documents Results

	An Act to Increase the School Fund	An Act to Incorporate	Articles of Agreement
Is there a clearly stated education mission?	No	No	Yes
Is education valued over research?	Yes	Yes	Yes
Is there a definition of education?	No	No	Yes

Source: Charter of the Museum of Comparative Zoology with a List of the Trustees, the By-Laws, and Other Papers.

⁹⁹ An Act to Establish the Smithsonian Institution for the Increase and Diffusion of Knowledge Among Men, 29th Cong., 1st sess. (August 10, 1846): sec. 1.

¹⁰⁰ Joseph Henry, “Programme of Organization,” Accessed May 21, 2012. <http://www.sil.si.edu/Exhibitions/Smithson-to-Smithsonian/henry.htm>.

¹⁰¹ Joseph Henry, “Programme of Organization.”

The Museum of Comparative Zoology valued education in all of its founding documents.¹⁰² However, the “Articles of Agreement” between the MCZ and Harvard also lay out both the educational mission and defines education for them. The mission of the MCZ is based on the use of its collection, “...to illustrate and teach the principles of the science of Zoology.”¹⁰³ The museum defines its education mission broadly. Section Nine of the “Articles of Agreement” stated that it was the duty of the Curator:

...to give lectures and instruction to regular classes of students under his care, to classes of teachers of the Public schools, and to classes of pupils in the Normal schools, in the Commonwealth, and to such special classes of students and persons desirous of availing themselves of his instructions and of the advantages of the of the Museum, as he may receive or invite for those purposes.¹⁰⁴

Table 3 American Museum of Natural History Founding Documents Results

	An Act to Incorporate	Office of the Board of Commissioners
Is there a clearly stated education mission?	Yes	Yes
Is education valued over research?	Yes	Yes
Is there a definition of education?	Yes	Yes

Source: The First Annual Report of the American Museum of Natural History.

Both of the founding documents for the AMNH demonstrate that the institution valued education, had an educational mission, and defined education. “An Act to Incorporate American Museum of Natural History” states the trustees are to establish a “...Museum and

¹⁰² *Charter of the Museum*, 5-8.

¹⁰³ *Charter of the Museum*, 12.

¹⁰⁴ *Ibid.*, 17.

Library of Natural History,” with the purpose, “...of encouraging and developing the study of Natural Science; of advancing the general knowledge of kindred subjects, and to that end of furnishing popular instruction and recreation.”¹⁰⁵ The correspondence between the “Office of the Board of Commissioners of the Central Park, New York” and the trustees further defined the education mission, enlisting the museum to “become an aid in the Great Educational System of the city,” and to be, “...an instructive and acceptable resort for the for the people of the city, and for the throngs of strangers that visit it.”¹⁰⁶ In the letters to the “Office of the Board of Commissioners of the Central Park, New York,” it is the city commissioner that first brings up the benefit to the public education system.¹⁰⁷

Founding Documents: Discussion

The three different models viewed education differently. The national model, the SI, did not mention education once in either of the founding documents. While “diffusion” could be seen to mean education, Henry’s “Programme of Organization” defines it at the dissemination of published materials. The university model, the MCZ, showed that it valued education over research in all three of the founded documents. However, the museum’s educational mission was not explicitly stated until the “Articles of Agreement” with Harvard. The museum might have been chartered by the state, but its educational mission and how it defined education come from its collaboration with Harvard. Through that association, it is able to define education for the institution. It is interesting that the MCZ defines its educational mission more specifically than just the public. The first of the Curator’s educational responsibilities are to *his* students in the Lawrence Scientific School. The

¹⁰⁵ American Museum of Natural History, *First Annual Report: 1869* (New York: American Museum of Natural History, 1870), 10.

¹⁰⁶ *First Annual Report: 1869*, 17.

¹⁰⁷ *First Annual Report: 1869*, 17.

city/state model, the AMNH, clearly states its educational mission, values education over research, and defines who they will educate in both documents. The AMNH defines education for them as the public, but does not identify any subsections of the population.

Annual Reports: Results

The annual reports document analysis needs some additional definitions and further explanation. The criteria are self-explanatory except for the second criteria: “Does the museum offer direct education?” Direct education means two things: the museum was holding classes at the museum or creating content that was repeated by teachers in the classroom. All six of the criteria are noted as yes or no answers, as well as the date when they first occur in the reports. The results for all three of the museum are shown on Table 4.

According to the document analysis, the *Annual Report of the Board of Regents of the Smithsonian Institution, showing the Operations, Expenditures, and Condition of the Institution* and the *Report of the United States National Museum, Under the Direction of the Smithsonian Institution*, only two of the criteria were identified. The Smithsonian offered lectures from the very beginning and later created a specific plan for educational exhibits.

The “Act to Establish the Smithsonian Institution,” stipulated that the SI was to have a lecture hall.¹⁰⁸ However, in the 1850 annual report, Joseph Henry claimed that the lectures were the “least important” of the SI’s objectives.¹⁰⁹

¹⁰⁸ An Act to Establish the Smithsonian Institution for the Increase and Diffusion of Knowledge Among Men, 29th Cong., 1st sess. (August 10, 1846): sec. 5.

¹⁰⁹ *Annual Report of the Board of Regents of the Smithsonian Institution, showing the Operations, Expenditures, and Condition of the Institution for the Year 1850*, (Washington: Government Printing Office, 1851), 25.

Table 4 Annual Reports Results

	Smithsonian Institution		Museum of Comparative Zoology		American Museum of Natural History	
	Yes/No	Date	Yes/No	Date	Yes/No	Date
Does the museum offer lectures?	Yes	1847	Yes	1862	Yes	1880
Does the museum offer direct education?	No	NA	Yes	1863	Yes	1884
Do they make classroom exhibits?	No	NA	Yes	1871	No	NA
Does the museum serve a normal school function?	No	NA	Yes	1863	Yes	1880
Are there specific plans for how to make exhibits educational?	Yes	1884	Yes	1863	Yes	1884
Is there an education department?	No	NA	Yes	1871	Yes	1884

Sources: Annual Report of the Board of Regents of the Smithsonian Institution, showing the Operations, Expenditures, and Condition of the Institution; Report of the United States National Museum, Under the Direction of the Smithsonian Institution; Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College to the President and Fellow of Harvard College; The Annual Report of the American Museum of Natural History.

Henry was outspoken about what he believed was the SI's mission and objective.

According to Henry, its sole purpose was the creation of new knowledge. In the 1868 annual report, he stated that:

It can, therefore, scarcely be too often repeated that the Institution is not, as our foreign correspondents often suppose, as association of learned men similar to the scientific societies of Europe and America: that it is *not a university for the education of youth*, nor an agency for the diffusion of useful knowledge among the people of the United States, but primarily a foundation for enlarging the boundaries of science by stimulating and assisting the researches of original inquirers, wherever found, and for

gratuitously diffusing the results of such researches wherever they may conduce to the intellectual or material interests of men.¹¹⁰

If the Smithsonian was conducting any educational practices, they were not mentioned in the annual reports, until the museum began to publish its own annual report, the *Report of the United States National Museum, Under the Direction of the Smithsonian Institution*. These reports were written by the SI's Assistant Secretary, George Brown Goode. In the 1884 annual report, he instituted a policy for creating education exhibits:

1. No object will be placed on exhibition which is not of evident educational value, and likely to interest and instruct a considerable percentage of the persons visiting the Museum.
2. The exhibition of duplicate materials is to be avoided, except in instances where similar objects can be shown to advantage in different divisions of the Museum.
3. Each object will be placed in a case of the form best suited for its effective display, and the light, color of the background, &c., will be so adjusted as to show it to best possible advantage and with the least possible fatigue to the eyes of the visitor.
4. Each object, or group of objects, will be accompanied by a large plainly printed label, which will give a concise description of what is shown, an account of its origin and uses, a synopsis of its history, and the name of the person or organization contributing it to the Museum. The character of the Museum is such that any labels which might suggest advertising for business purposes must be excluded. It will be the policy of the Museum, however, to give prominence on each label to the name of the person or business house from whom it has been received, provided that the object is a gift to the Museum.
5. The objects will be grouped together in systematic order, and each case will be provided with a general descriptive label. In the case of collective exhibits the general label may also give the name of the contributor.
6. The specimens will be illustrated and supplemented by pictures, diagrams, books, and maps, in such manner that the Museum may form an encyclopedia, the illustrations for which are in the exhibition cases, the text in the labels.
7. Guide-book manuals of the different departments will be published, which will embody in concise and systematic form the information given by the specimen labels, together with such illustrative material as may seem necessary to present in addition.¹¹¹

¹¹⁰ *Annual Report of the Board of Regents of the Smithsonian Institution, showing the Operations, Expenditures, and Condition of the Institution for the Year 1865*, (Washington: Government Printing Office, 1856), 13. The italics are mine.

¹¹¹ *Report of the United States National Museum, Under the Direction of the Smithsonian Institution for the Year 1884* (Washington: Government Printing Office, 1885), 12.

These rules were set in place to create a system where objects could be displayed in a meaningful way to hundreds of thousands of visitors and, “...afford a means of culture and instruction to every person.”¹¹²

The document analysis of the *Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College to the President and Fellow of Harvard College* identified all of the criteria looked for. The first criterion was identified in the annual report for the year 1862. It may be the case that these practices were in place before then, but due to the gaps in available annual reports, this cannot be confirmed. The 1862 annual report states that the museum just ended a successful series of lectures, which were attended by “...one hundred to one hundred and twenty person, about half of whom were not connected with the University of Cambridge, but came from the people at large.”¹¹³

Three more of the criteria were identified in the next year’s report. This report shows the practices of direct education, normal school functions, and plans for making exhibits educational. According to Agassiz, the instruction given to special students of Zoology in the Lawrence Scientific School “...forms such an important part in the active operations of our institution.”¹¹⁴ The main goal of their education was to teach them to how to observe “...the great book of nature” by giving them objects to study.¹¹⁵ He would also put students, whom he called assistants, in charge of departments within the museum; when Albert S. Bickmore was a student, he was in charge of the collection of Mollusca.¹¹⁶ The museum performed normal school functions on at least two occasions in 1863. Two delegations of teachers from

¹¹² *Report of the United States National Museum 1884*, 9.

¹¹³ *Annual Report of the Trustees of the Museum of Comparative Zoology Together with the Report of the Director 1862* (Boston: Wright & Potter, 1863), 4.

¹¹⁴ *Annual Report of the Trustees of the Museum of Comparative Zoology Together with the Report of the Director 1863* (Boston: Wright & Potter, 1864), 6.

¹¹⁵ *Annual Report of the Trustees 1863*, 7.

¹¹⁶ *Ibid.*, 46.

Rhode Island and New Hampshire, about 400 people, came to the museum to spend a day examining the objects under the guidance of Agassiz and his assistants.¹¹⁷ Agassiz felt that this was an important kind of instruction that was gradually being accepted and better appreciated.¹¹⁸ Agassiz's particular plan for creating educational exhibits had some similar aspects to Goode's. His main concept to further the understanding of the specimen on display was to have diagrams drawn to illustrate characteristics that were not "easily preserved in the usual mode of exhibiting."¹¹⁹ He also used illustrations "...to give correct ideas of the character of the local fauna" by showing "...views of the characteristic vegetation of different regions."¹²⁰

In the annual report of 1871, the last two criteria were identified. The Conchology and Entomology departments began to prepare collections "...for the use of the State Normal Schools, the Agricultural Colleges, and the Girls' High and Normal Schools in Boston."¹²¹ The museum created the position of Assistant in Charge of Instruction that was filled by N. S. Shaler. He was in charge of Zoology and Paleontology instruction for all Harvard; in total, he had ninety-seven students who received laboratory instruction at the museum.¹²²

The document analysis of *The Annual Report of the American Museum of Natural History* identified all of the criteria except the distribution of classroom exhibits and a plan to make exhibits educational. All of these education practices started in the 1880's, more than ten years after the founding of the institution. In the 1880 annual report, the museum first offered lectures and performed normal school functions. Bickmore gave his first illustrated

¹¹⁷ Ibid., 6.

¹¹⁸ Ibid. He is referring to nature study, which at the time did not yet go by that name.

¹¹⁹ Ibid., 14.

¹²⁰ Ibid., 15.

¹²¹ *Annual Report of the Trustees of the Museum of Comparative Zoology, at Harvard College, in Cambridge; Together with the Report of the Director for 1871* (Boston: Wright & Potter, 1872), 5.

¹²² *Annual Report 1871*, 28.

lecture at the museum to twenty-eight teachers and supervisors of the New York City Public School System. This new endeavor of the museum was seen to indicate the beginning of a “...wide and important field of usefulness our institution is destined to occupy as a means of educating the youth of our city.”¹²³

In 1884, the museum received state funding to expand their lecture program. An item in the state’s Annual Appropriations Bill provided \$18,000 for the museum to offer a course of lectures to teachers of common and normal schools, which were to be repeated to their students; the bill also called for the museum to provide “...training, and to furnish the several State normal schools with such appliances and apparatus” to conduct illustrated lectures.¹²⁴ Bickmore resigned from the position of Supervisor to head up the newly created Department of Public Instruction, which would handle the new responsibilities from the state.¹²⁵ The museum’s plan for making exhibits educational was creating “Guides” for each of the collections; they were considered an “easy and popular method of studying the collections.”¹²⁶ In some collections, the clutter was so bad that the guide was the only way to identify specimens.¹²⁷

Annual Reports: Discussion

All three of the museums offered lectures and had specific plans for educational exhibits. Lectures were both popular and scientific in nature. The lectures at the American Museum of Natural History became popular and *The New York Times* reported that on

¹²³ *The Annual Report of the American Museum of Natural History for the Year 1880* (New York: American Museum of Natural History, 1881), 8.

¹²⁴ *The Annual Report of the American Museum of Natural History for the Year 1884* (New York: American Museum of Natural History, 1885), 7.

¹²⁵ *Annual Report 1884*, 5.

¹²⁶ *Ibid.*, 7.

¹²⁷ *The Annual Report of the American Museum of Natural History for the Year 1885* (New York: American Museum of Natural History, 1886), 11.

October 15th, 1893 the lecture hall was overflowing to the point where several hundred people had to be turned away.¹²⁸ The Smithsonian's only educational practice for nearly thirty years was offering lectures. Goode, however, created in-depth and specific plans for educational exhibits. His central point of exhibits was that they should be like an encyclopedia, with the objects being the images and the labels the text.¹²⁹ The AMNH's method for creating education exhibits did not actually change the exhibit, but supplied additional materials to improve the experience. The national model met the fewest criteria, only two. The city/state model fell in the middle of the pack with five of the six criteria met. The university museum met all of the criteria.

Personal Papers & Writings: Results

The two criteria for this analysis are: what do they value most highly about museums, and do they have specific methods for museum education. The first criteria will be determined by which aspect of museum work they mention the most: collecting, research, or education. The second is determined by providing a detailed plan for museum education. The personal writings for the SI are lectures by Assistant Secretary George Brown Goode; the lectures selected are from a compilation of his lectures edited by Sally Gregory Kohlstedt, author of *Teaching Children Science*. All of the lectures were related to science education and the history of science, and were selected for this purpose. The personal writings for the MCZ are the Director's Report section of the museum annual reports. The data from this source is about Agassiz's personal motivations and goals for the museum.

¹²⁸ "Prof. Bickmore's Lecture; Autumn Course to Teachers Auspiciously Opened," *The New York Times*, accessed May 20, 2012. <http://query.nytimes.com/mem/archive-free/pdf?res=9E06E5DD173EEF33A25756C1A9669D94629ED7CF>.

¹²⁹ *Report of the National Museum 1884*, 12.

Albert Bickmore's, "An Autobiography with Historical Sketch of the Founding and Early Development of the American Museum of Natural History," has been digitized and is available on the AMNH website. Table 5 shows the results of this data analysis: each criterion is identified by a word or phrase pulled from the sources.

Table 5 Personal Papers & Writings Results

	George Brown Goode, Smithsonian Institution	Albert S. Bickmore, American Museum of Natural History	Louis Agassiz, Museum of Comparative Zoology
What do they value most highly about museums?	Education	Education	Education/Collecting
Do they have specific methods for museum education?	Object Lessons	Visual Instruction	Student Workers

Sources: George Brown Goode, *The Origins of Natural Science in America: The Essays of George Brown Goode*; Albert S. Bickmore, "An Autobiography with Historical Sketch of the Founding and Early Development of the American Museum of Natural History;" *Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College to the President and Fellow of Harvard College*; *The Annual Report of the American Museum of Natural History*.

All three of the museums valued education highly. Each of the personal papers explored the affect that museum should have on education. The only museum in which a value was held up as high as education was the MCZ. Goode modeled the SI after the British Museum, the national museum of England. He particularly valued its ability "...to meet the needs of the people" and that the museum was "...more intimately intertwined with the policy of national popular education."¹³⁰ He stated that schools only educate during the

¹³⁰ George Brown Goode, *The Origins of Natural Science in America: The Essays of George Brown Goode*, ed. by Sally Gregory Kohlstedt (Washington: Smithsonian Institution Press, 1991), 305-306.

“infancy of the mind,” but museums should serve all people through, “...maturity to old age.”¹³¹

Louis Agassiz valued collections very highly at the MCZ. He argued that the museum’s collection was rival to those of the British Museum and the J ardin des Plantes.¹³² His student’s summer research trips also served as collecting missions for the museum.¹³³ In this way, collections served as a tool for educating his students. He valued education as important as collections. Agassiz believed that the progress of the field of zoology was too rapid to use textbooks to teach, so museums had to be used to “...educate professional naturalists.”¹³⁴

Albert Bickmore valued museum education over all other functions. He believed that the AMNH should play “...a helpful part in promoting the education of our youth.”¹³⁵ He would spend from 1884 to 1904 working to increase the impact of the museum on public education.¹³⁶

Goode defines an educational museum as one in which an, “...attempt is made to teach the unprofessional visitor ... popular education.”¹³⁷ His specific method for museum education is best described as object lessons. He believed that, “The technique for teaching with artifacts was through arrangement and labels.”¹³⁸ To Goode, museums were “houses full

¹³¹ Goode, *The Origins of Natural Science*, 307.

¹³² *Annual Report of the Trustees of the Museum of Comparative Zoology, at Harvard College, in Cambridge; Together with the Report of the Director for 1864* (Boston: Wright & Potter, 1865), 14.

¹³³ *Ibid.*, 10

¹³⁴ *Annual Report of the Trustees 1863*, 7.

¹³⁵ Albert S. Bickmore, “*An Autobiography with Historical Sketch of the Founding and Early Development of the American Museum of Natural History*” (Vol. 2, American Museum of Natural History, 1908), 51.

¹³⁶ Bickmore, “Autobiography,” (Vol. 2), 79.

¹³⁷ *Ibid.*, 309.

¹³⁸ *Ibid.*, 13.

of ideas, arranged with the strictest attention to system.”¹³⁹ Exhibits were pages in an encyclopedia with labels that explained “...name and history so fully that all the probable questions of the visitors are answered in advance.”¹⁴⁰

However, museum education did not stop at his students. He also desired that for any visitor “...a mere walk through our Museum teaches him something.”¹⁴¹ Agassiz specific plan for museum education was teaching the students of the Lawrence Scientific School in the museum by putting them in charge of collections. He demanded a great deal from his student assistants; they were often required to do much of the manual work around the museum.¹⁴² However, he was unable to “...except in a measure, and in two or three instances, to complete the education of the students who had come to me for instruction.”¹⁴³ This may have indicated that the education received was very good, because he claims that these students were drawn away with the temptation of professorships or as heads of scientific institutions.¹⁴⁴

Bickmore started a series of lectures that gave teachers the tools to instruct on mandated subjects such as zoology that they had no “possibility of properly carrying it into practice.”¹⁴⁵ He took pride in these lectures and recorded the attendance figures as well as developed new methods for lanternslide presentation.¹⁴⁶ This method of instruction was

¹³⁹ *Ibid.*, 330.

¹⁴⁰ *Ibid.*, 328-329.

¹⁴¹ *Annual Report of the Trustees of the Museum of Comparative Zoology, at Harvard College, in Cambridge; Together with the Report of the Director for 1868* (Boston: Wright & Potter, 1869), 4.

¹⁴² *Annual Report of the Trustees 1868*, 5.

¹⁴³ *Annual Report of the Trustees 1864*, 8.

¹⁴⁴ *Ibid.*, 8. It is quite possible he is taking about Bickmore here. Bickmore left to pursue his own research and a professorship at Colgate University at around the same time this was written.

¹⁴⁵ *Ibid.*, 71.

¹⁴⁶ Bickmore, “Autobiography,” (Vol. 2), 78.

known as visual instruction.¹⁴⁷ The method was used to illustrate complex concepts, by using backlit colorized glass plates. However, Bickmore only began giving lecture series when the museum was facing the prospect of empty halls after they moved in 1877.¹⁴⁸ These lectures also followed state mandates and expand whenever more money was made available. Assisting public education was very profitable for the museum. They were able to fund several museum-wide expansions in order to increase the lecture hall size.¹⁴⁹

Personal Papers & Writings: Discussion

The results of this document analysis shows that each in each of the three case studies, the institutional leaders valued education most in museums and they all had different specific plans for museum education. The national model, when it was lead by George Brown Goode, used exhibits to educate. The university model, founded by Louis Agassiz, used students to assist in museum work, which in turn served as their education. The city/state model, founded by Albert S. Bickmore, used visual instruction to further museum education.

¹⁴⁷ Amos Emerson Dolbear, *The Art of Projecting: A Manual of Experimentation in Physics, Chemistry, and Natural History with Porte Lumiere and Magic Lantern*, (Boston: Lee and Shepard, 1888), 13.

¹⁴⁸ Bickmore, "Autobiography," (Vol. 2), 51.

¹⁴⁹ Bickmore, "Autobiography," (Vol. 2), 89-90.

Conclusion

Study Nature, Not Books.

-Louis Agassiz

The quote by Louis Agassiz that opens this chapter captures the educational philosophy in 19th century museums. The Smithsonian Institution, the Museum of Comparative Zoology, and the American Museum of Natural History all educated through the use of their collections, but each museum model had a different response to education.

The results of these three document analyses seem to suggest that a museum's model (national, university, and city/state) played an important role in determining how it responded to education. Their response to education was a result of their model and their leadership.

The Smithsonian Institution, the national model, was the least focused on education. This was a result of confusing legislation that allowed for Henry to define diffusion as dissemination and Goode to define it as education.

The Museum of Comparative Zoology, the university model, was the most focused on education. The combination of the MCZ with Harvard's Lawrence Scientific School resulted in the museum focusing on educational practices.

The American Museum of Natural History, the city/state model, was responsive to education, but only when it was a necessity or supported by the city or state. Its educational practices came out of their move to a new location in 1877 and the need to find a new

“...wide and important field of usefulness.”¹⁵⁰ Their educational programs also followed state mandates and provided significant funding to the museum for expansion.

Limitations

The greatest limitation in this study is that it is a series of case studies. The nature of this type of study is that it will be able to make suggestions about the field at large, but not any specific claims. However, specific claims can be made about the chosen museums.

Two limitations affect the annual reports document analysis. The first is the availability of the MCZ annual reports. Their annual reports were bound in two volumes 1862-1876 and 1880-1896; so there are gaps in the data: 1859-1861, 1877-1879, and 1897-1900. The second is in the format of the AMNH reports. Unlike the other two museums, the AMNH report does not have a report from the top staff person. In place of that, it contains a report from the trustees.

This study uncovered very few historical works on what education in natural history museums looked like in the 19th century. Most of the authorship on the subject is relegated to small sections in general histories of museums. While the study of this field has been limited, it does have a distinct historiography.

¹⁵⁰ *The Annual Report of the American Museum of Natural History for the Year 1880* (New York: American Museum of Natural History, 1881), 8.

Recommendations for Future Work

The study leads to two important recommendations for the museum field at large. First, this thesis is but a small fragment of the history of American museums a subject that deserves greater investigation. Second, the normal school functions that the museums in these case studies served should be revisited and more programs aimed toward teachers should be put in place.

Further research must be done on the history of museums. Museums are, in part, created to preserve cultural heritage yet the field is allowing its own heritage to be forgotten.

The normal function that museums served in the 19th century were very important and should be a direction that museums continue. The AMNH is starting a masters program, with full scholarship support from New York State, to educate future public school teachers.¹⁵¹

¹⁵¹ Douglas Quenqua, "Back to School, Not on a Campus but in a Beloved Museum," *New York Times*, January 15, 2012, accessed April 28, 2012, <http://www.nytimes.com/2012/01/16/nyregion/american-museum-of-natural-history-will-groom-school-teachers.html>

Bibliography

Primary Sources

American Museum of Natural History. *The Annual Report of the American Museum of Natural History, 1869-1900*. Accessed May 21, 2012. http://digitallibrary.amnh.org/museum/annual_reports/help.

Annual Report of The Board Of Regents of the Smithsonian Institution, showing the Operations, Expenditures, and Condition of the Institution. Washington: Government Printing Office, 1847-1885.

Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College to the President and Fellow of Harvard College. Cambridge: University Press, 1862-1876 and 1880-1896.

Bickmore, Albert S. "An Autobiography with Historical Sketch of the Founding and Early Development of the American Museum of Natural History." American Museum of Natural History, 1908.

Bickmore Letters, Albert Bickmore Papers, B5354, Box 2 folder 37, Box 3 folder 1, 2, and 6, Box 6 folder 2, 10, and 12, Box 8 folder 37, Box 10 folder 9, Box 11 folder 3, Box 13 folder 32, Box 14 folder 8 and 35, Box 15 folder 24 and 28, Box 16 folder 4, Box 23 folder 6; American Museum of Natural History Archives, New York, NY.

Goode, George Brown. *The Origins of Natural Science in America: The Essays of George Brown Goode*. Edited by Sally Gregory Kohlstedt. Washington: Smithsonian Institution Press, 1991.

Report of the United States National Museum, Under the Direction of the Smithsonian Institution. Washington: Government Printing Office, 1886-1900.

Secondary Sources

Abt, Jeffery. "The Origins of the Public Museum," in *A Companion to Museum Studies*. Edited By Sharon Macdonald. Oxford: Blackwell Publishing Ltd, 2006.

Agassiz, George Russell. "The Museum of Comparative Zoology, 1858-1928," in *The Development of Harvard University: Since the Inauguration of President Eliot 1869-1929*. Edited by Samuel Eliot Morison. Cambridge: Harvard University Press, 1930.

Alexander, Edward P. *Museums in Motion: An Introduction to the History and Functions of Museums*. Nashville: AALSH Press, 1979.

- Allen, Henry Moe. "The Role and Obligations of Museums as a Scholarly Resource," in *Museum and Education*. Edited by Eric Larrabee. Washington: Smithsonian Institution Press, 1968.
- Asma, Stephen T. *Stuffed Animals and Pickled Heads: The Culture and Evolution of Natural History Museums*. New York: Oxford University Press, 2001.
- Bennett, Tony. *The Birth of the Museum: History, Theory, Politics*. New York: Routledge, 1995.
- Blitzer, Charles. "Preface," in *Museum and Education*. Edited by Eric Larrabee. Washington: Smithsonian Institution Press, 1968.
- Carr, David. "The Adult Learner in the Museum," in *Museums and Universities: New Paths for Continuing Education*. Edited By Janet W. Solinger. New York: Collier Macmillan Publishers, 1990.
- Conn, Steven. *Museums and American Intellectual Life, 1876-1926*. Chicago: University of Chicago Press, 1998.
- Dolbear, Amos Emerson. *The Art of Projecting: A Manual of Experimentation in Physics, Chemistry, and Natural History with Porte Lumiere and Magic Lantern*. Boston: Lee and Shepard, 1888.
- Dyson, Robert H., Jr. "Public Education: The Experience of the University Museum at the University of Pennsylvania," in *Museums and Universities: New Paths for Continuing Education*. Edited By Janet W. Solinger. New York: Collier Macmillan Publishers, 1990.
- Flower, William Henry. *Essays On Museums and other Subjects Connected with Natural History*. New York: The MacMillan Company, 1898.
- Foucault, Michel. *The Order of Things*. Edited by R. D. Laing. New York: Pantheon Books, 1970.
- Franco, Barbara. "Evolution of the Field: Historical Context," in *Patterns in Practice: Selections from the Journal of Museum Education*. Washington: Museum Education Roundtable Inc., 1992.
- Harris, Neil. "The Gilded Age Revisited: Boston and the Museum Movement." *American Quarterly* 14, Number 4 (1962): 546-566.
- Hawkes, Terence. *Structuralism and Semiotics*. Berkeley: University of California Press, 1977.

- Hellman, Geoffrey. *Bankers, Bones & Beetles: The First Century of The American Museum of Natural History*. New York: The Natural History Press, 1969.
- Herbart, Johann Friedrich. *Letters and Lectures on Education*. Translated by Henry M. Felkin and Emmie Felkin. Syracuse: C.W. Bardeen, 1898.
- Herbart, Johann Friedrich. *The Science of Education: Its General Principles Deduced from its Aim and Æsthetic Revelation of World*. Translated by Henry M. Felkin and Emmie Felkin. Boston: D.C. Heath & Company, 1895.
- Hooper-Greenhill, Eilean. *Museums and the Shaping of Knowledge*. New York: Routledge, 1992
- Jevons, William Stanley. "The Use and Abuse of Museums," in *Methods of Social Reform: and Other Papers*. London: MacMillan and Co., 1883.
- Kaestle, Carl F. *Pillars of the Republic: Common schools and American Society, 1780-1960*. New York: Hill and Wang, 1983.
- Kohlstedt, Sally Gregory. *Teaching Children Science*. Chicago: The University of Chicago, 2010.
- Lurie, Edward. *The Founding of the Museum of Comparative Zoology*. Cambridge: Harvard Press, 1959.
- Murray, David. *Museums, Their History and Their Use*. New York: MacMillan & Company, 1904.
- Oehser, Paul H. *The Smithsonian Institution*. Washington: Praeger Publishers, 1970.
- Ogren, Christine A. *The American State Normal School: An Instrument of Great Good*. New York: Palgrave Macmillan, 2005.
- Osborn, Henry Fairfield. *The American Museum of Natural History: Its Origin, Its History, The Growth of Its Departments to December 31, 1909*. New York: Irving Press, 1911.
- Ripley, S. Dillon. "Introduction," in *Museum and Education*. Edited by Eric Larrabee. Washington: Smithsonian Institution Press, 1968.
- Richardson, Edgar P. "The Museum and Education," in *Museum and Education*. Edited by Eric Larrabee. Washington: Smithsonian Institution Press, 1968.
- Schwarzer, Marjorie. *Riches, Rivals & Radicals: 100 Years of Museums in America*. Washington: American Association of Museums, 2006.
- Sheets-Pyenson, Susan. *Cathedrals of Science: The Development of Colonial Natural History Museums during the Late Nineteenth Century*. Montreal: McGill-Queen's University Press, 1988.

Solinger, Janet W. "Museums and Universities: Choices," in *Museums and Universities: New Paths for Continuing Education*. Edited By Janet W. Solinger. New York: Collier Macmillan Publishers, 1990.

True, Webster, P. *The First Hundred Years of the Smithsonian Institution 1846-1946*. Washington: The Smithsonian Institution Press, 1946.

Udden, J.A. "Museum Buildings in the United States." *Science* 36, Number 917 (1912): 110-113.

Yochelson, Ellis L. *The National Museum of Natural History: 75 Years in the Natural History Building*. Washington: The Smithsonian Institution Press, 1985.