How Decisions Are Made When Creating Information Design Exhibits for Museums

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Abstract

This case study illustrates how and when decisions are made during the creative process occurring within two cultures: Graphic Designers and Museum Exhibitors. This study investigates the pre-visual creative process and fabrication of exhibits concerning the history of farming in Oneida County and the history of New York State during the American Revolutionary War at the Marcus Willet Visitors Center at Fort Stanwix in Rome, NY. This study will apply wayfinding theories to information design practice; the result is a field guide for both graphic and museum designers.

This case study explains the nature of decision-making used in creation of information design. The particular project to be studied is the design of a permanent exhibit for a community historical society. Each decision to be made is documented; details are provided regarding what decisions are made, who makes the decisions, when decisions are made, and the many factors that impact the decision-making process.

The case study is a description of this particular design process and a guide to the way in which decisions are made in information design. The major decisions concern the audience, content, means of wayfinding, design consistency, color, typographic parameters, size, and viewing distances. This study explores the impact these decisions had on the final exhibition design.
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Last and most importantly I thank my wife Tracy Ann, who managed a career, a house, a family and me. She is the one, true person to whom I dedicate this work.

We truly did make it together.
Preface

For many years professional creative people have worked to produce informational graphic design. Without professionally designed information, we could not survive in today’s social environment. The objective of this professional field, its purpose, is to create an effective, interesting way of displaying useful information. Such information assists a social community at work, travel, education and entertainment.

How does a designer use graphic communication and design to first convey visual information and to then display it properly? How does this happen? What steps are required and who makes the decisions?
Today, as usual, Mr. Donald White has just left a typical museum board meeting. Concerns about attendance were on the agenda; the removal of an existing exhibit was also discussed. For a museum to function properly, the establishment relies on visitors. This is a concern for all that work in that establishment, especially for those who are earning a pay check. That function overrides all others. Among the factors that are essential to fulfill this requirement are planning and imagination.

Mr. White who became president of the Oneida County Historical Society in 2003, (White, D., 2006) is a key figure in the planning process. Beginning in 1994, he served as a board member. His apprehensions were the same as those of the Board: a new year brings new ideas and new questions.

Most of today’s concerns focused on the museum’s attendance; last year when, attendance was down considerably, reducing financial revenues. Museums are constantly working to increasing financial revenue; without this, museums could close. Funding sources can be obtained by attendance, member support, government grants, company or corporate support funding drives, and individual donations.

Deciding what type of exhibit will heighten attendance requires different choices and different decision making processes. More specifically, deciding what is to be seen makes one wonder how museums design exhibits. Several questions to be asked are: Who should participate in the design process? What issues should be considered? What role do previous experiences and exhibits play in the decision-making process? How is it researched and who will do the research? Are there personal preferences? What types of instructional design theories will be used? Do
certain factors have more influence and weight than others? Finally, could other museums provide knowledge and offer insights that lead to more effective display designs?

The museum staff uses a comprehensive model; it is based on a procedure documented by the National Park Service. The National Park Service has created an outline covering “client requirements,” establishing a working procedure used when creating a museum exhibit (Bloom, Powell, 1984). Over the course of time the process has been simplified and modified (White, D., 2006), (Elliott, T., 2006) to represent the procedures followed by many of today’s museums. However, these modifications do not help in all cases.

Many new ideas and methods (Carliner, 1987) have been created. Traditionally the decision process begins by reviewing the existing operations, programs, displays and concerns of the individual visitors.

As the board meeting adjourned, the members express their desire for a new exhibit. Opinions regarding the theme and the type of display vary considerably within the room. Finally a decision is made: this year the museum will create an exhibit documenting the farming history of Oneida County.

“As Mr. White walked from the board room, his eyes glanced at the walls and the interiors of the existing display cases around him. He noticed that the present exhibit was deficient in some ways, lacking the finer points of strong design and appearance”.

Just as retail businesses create colorful window ads and flyers, museum displays have to be designed with attractive packaging. As with products displayed on retail store shelving, museums have to create ways to “attract” the eye (White, A. 2002). The means to achieve “attraction” often challenges museums the most. (Elliott, T., 2002)
Mr. White knows that advanced planning and the understanding of the objectives are often overlooked. The success of the exhibit and the experience it creates will depend on many issues. The most important of these are its educational purpose, the quality of the artifacts, and the graphics. These three particular issues require that the planners understand the mindset of the viewer, asking how the viewers look at the displays, how they take in information, and what they hope to gain from seeing the exhibit. A key role of a museum is instructional; (Carliner, 1987) this is a hidden role, which many visitors do not appreciate. They often are educated without knowing they are gaining knowledge.

Museum attendance has been studied for over two decades. Research indicates an aggregate growth in visitation level. According to a study conducted by the American Association of Museums (Bloom, Powell, 1984), Americans make 600 million visits to museums each year; this far exceeds attendance at typical sporting events. School groups represent 30 percent of this figure.

The decision process in designing new exhibits, and its impact on attendance incorporates many factors, creating a demanding and significant concern for the museum director. Mr. White regards this decision process as a “series of events” (White, D., 2006) which started when he entered that board room. The determination of what the museum displays is the product of hundreds of choices.

Decisions are made regarding topic, themes, artifacts, display, appear, labeling, and signage. The decision process is the ruling factor. Explaining how that process begins and occurs is the objective of this paper.
The fascination started in 1994 at a local museum seeking volunteers to redesign an existing exhibit space. I had a background in fine scale modeling, history and graphic design. I found it interesting when I learned the design problem was to create a prehistoric exhibit. The interest was the key; it is the key to true success of a museum exhibit. Lack of interest is perhaps the museum’s greatest fear.

I had been a visitor to many historical locations and museums and many of them still hold my interest today. There are many factors that contribute to this; these include color, text, images, scaled modeled displays, and audio. These factors seize attention. There is a feeling of success that museum workers feel when the audience is engaged. They are exultant that the goal to hold interest was acquired. This is only a small part of what my research concerns, but it is a part of a puzzle that I want to help answer. My interests led me to explore and study the factors required for a museum to make proper decisions when creating an exhibit.
# Table of Contents

Abstract - iii

Acknowledgments - iv

Vignette - v

Preface - vi

Literature Review - ix

Interest Begins - xi

Chapter 1. Learning and Education - 1

Decision Making - 2

Defining the Project Parameters - 4

The Informational Design and the Informal Settings in a Museum - 9

Case Study: Project Parameters - 11

The OCHS Project, 2005-2006 - 11

The Willett Center - 14

Chapter 2. Audience - 17

Chapter 3. Content - 22

Chapter 4. Wayfinding Theory - 23

Case Study Images (Willett Center) - 25

Investigating of Design Successes and Dissatisfaction - 26
Case: The Entrance Graphics ----------------------------------------------- 27
Case Study Images (Willett Center)----------------------------------------- 29
Evaluation --------------------------------------------------------------- 30
Case Study: OCHS ---------------------------------------------------------- 33

Chapter 5. Design --------------------------------------------------------- 35
   Design Concepts and Application ----------------------------------------- 35
   Fundamental Visual Communication Methods ................................. 38
   Attractiveness vs. Readability .................................................. 39
   Vector Model ---------------------------------------------------------- 40
   Vector Model Table------------------------------------------------------ 40
   Applying The Vector Value Model --------------------------------------- 41
   Demonstration of The Vector Model-------------------------------------- 41

Chapter 6. Sense-Making Theory ------------------------------------------ 39
   Making Sense of a Theory ....................................................... 39

Chapter 7. Production ---------------------------------------------------- 48

Chapter 8. Post Production Analysis --------------------------------------- 51

Chapter 9. Conclusion ----------------------------------------------------- 52
Tables and Illustrations

Cost’s Table of Value ................................................................. 40
Vector Models ................................................................. 43
Fort Stanwix ................................................................. 44
OCHS ................................................................. 45

References ................................................................. 54

Appendix ................................................................. 56
Chapter 1: Learning and Education

Our enjoyment with museums starts with childhood trips. An initial trip to a museum can be better than any gift (White, D., 2006). The aroma, the type of pictures, the scale models and colorful displays, everything can be stimulating and interesting. As each of us grows older, we develop particular interests. For inhabitants of central New York, a curiosity about 18th military history may develop. This curiosity is fostered by the state’s historical settings. Many of the greatest battles and conflicts of the American Revolutionary War were fought on New York soil. (Watt, 2000) Other influences, including books, magazines, and movies, also encourage the development of viewing interests about our history.

We know what is in store when visiting a great museum: we hope to enjoy ourselves. But to succeed museums must also meet educational objectives. Achieving these objectives ensures attendance and the financial ability to create future exhibits. Museum directors understand visitors support exhibits they enjoy; the museum must therefore make decisions to ensure continue attendance increase support and entertainment value. The unique decision making process required of the museum to do this is crucial.

The literature on decision making indicates that the best process for a museum to use and educate is to involve the participant, integrating key components of the exhibit with the participant. The mapping process between viewer and exhibit involves the content found in the exhibit’s text. The museum staff has an important job; they need to “teach” the contents (Behr, 1989).

Teaching is the art of interpreting information and conveying it so it is understood by those who are there to learn. The key to the success of this process is to have the student retrieve the information. The way this system works is that the instructor or instructional vehicle, in this
case the museum or exhibits, must transmit knowledge in the style of learning best suited to the intended audience (Witteborg, 1984, p.11).

Museum planners look at many resources before developing an exhibit’s theme. The most common approach is to depend on the museum’s own resources and collections. Over the years museums collect artifacts, images and documents. These historical treasures are cataloged and placed in a prepared storage area in which light and air is controlled. Museum directors or planners walk through these collection corridors and develop ideas, finding that rare item or items that might be of interest to the public. Items that appeal to the audience are selected, catalogued, and exhibited. But for the process of education to occur, the exhibition planner and the designer must make the right decision (Witteborg, 1984).

Decision Making

This study investigates how visual design decisions are made and how they affect the creative process between a graphic designer and their client. The process starts when the graphic designer is hired to create a permanent or temporary information exhibit for a museum. Each decision will be explored and documented; details will be provided regarding and how decisions are made, who makes those decisions, when they are made, and the many factors impacting the decision making process.

This study will first examine what type of audience visit a museum: their age, educational levels and their interests. How does the audience impact the design and the visual viewing distance of an exhibit? The study will next examine content. How do designers and museum staff work with content? How do they decide which type of Cost’s categories of values impact the design? We will further examine the wayfinding duties of designers. How do they determine
necessary tools, such as maps and visual guides that will help visitors begin and end a tour? To see how these things work we will develop two case studies involving two different museums with very similar goals. The first case study will examine the visitor’s center at Fort Stanwix National Park. The second case study two will look at the Oneida County Historical Society agricultural and farming display area (White, D., 2006).

A case study approach will create the opportunity to examine the nature of decisions that must be made in creating museum exhibit design. Questions arise from the nature of the audience, the content, the wayfinding techniques, the design strategy, production details, budget, and current events. To begin the process of intelligently answering questions, designers must educate themselves regarding the client’s needs, purposes, and capabilities (White, A., 2002).
Defining the Project Parameter

The initial step in this project was to learn about the client, determining what they wish to do and what type of design and creative parameters will be required. To begin it would be ideal to create an in depth “planning strategy” that incorporates the collective thoughts of a team or group of people consisting of museum staff and designers. Although each will have a unique job or responsibility, at this stage they will function as one, to carefully review the project and the exhibit’s objectives.

Setting aside the theme and items that will be viewed, the success of this exhibit will be determined by several factors. These include the educational experience it will provide, the quality of the objects that will be displayed, the graphic or visuals contents, the creative design, the creative fabrication and, most importantly, the attitude the visitor brings to the exhibit (Carliner, 1987). This brings us to an important cross road question regarding the visitor and the audience. Who are they and what do they want?

Saul Carliner has done several studies on this area. His view is that this part of the planning determines the audience’s interest level and the resulting level of success for an exhibit. He writes on his web site:

“Objects (meaning: historical items) form a centerpiece of most museums exhibits. Because of that, and because the primary purpose of museums is educational, museum professionals often refer to their work as object-based learning. One of the most significant choices a museum exhibit design team makes, therefore, is the choice of objects to be displayed. Choices are purposeful”. (Carliner, 1998, 2007)
Decisions regarding the choice of objects and their purpose are primary factors in maintaining the interest of the audience. The design team makes decisions by reviewing the “creation factors”; these factors are studies conducted on current events and interest as well as design creativities that are closely worked with and supported by content experts (Elliott, 2006.). The creation factors are determined at the exhibit’s earliest “conceptual stage”. By reviewing the “conceptual content” the team can and must determine whether the visitor or audience will consist of a “specialized or “generalized” audience.

What does this mean? For example, if an exhibit was to be about 19th century farming in New York State, an exhibit could be: 1) Appealing to only those with interest in 19th century farming in New York State; 2) Appealing to those interested in 19th century farming in general; 3) Appealing to those interested in 19th century farming equipment; or 4) Appealing to those interested in the history of New York in the 19th century. If any of these were the audience, it would be safe to state that the attendance would be very limited. The potential audience would be a very small group of people compared to the attendance created by an exhibit surrounding the events of 9/11.

Thus it is best (Elliott, 2006.) decided, first, if the audience will consist of specialized or generalized viewers. An understanding of what will appeal to the audience must be determined before the design team proceeds to the next steps in planning. Creating a base of knowledge regarding an entrance point that will interest the visitor is a key factor to success. Interest begins when the visitor walks through a museum’s entrance. When the entrance is determined the design team can settle down to the creative workings of the exhibit contents, a most important factor in ensuring a successful exhibition design.
Looking once again at the creative design team, a series of questions should be asked to help determine what will provide an intelligent response to the needs for the quality content that will entertain, educate, and inspire the visitor. To create content and “exhibit consistency” the team must develop a “planning strategy”.

The strategy is developed through a set of questions and values that are strictly followed by the design team. But what do designers mean by “exhibit contents”? The exhibit contents are the written and visual work that will provide “contentment” to the visitor of an exhibit. We must understand what the contents of an exhibit are and that these contents are controlled by several factors. How important is the educational value? What is the budget for this project? What type of funding is available for the exhibit? Answers to these questions set the stage for the imagery that will be seen, the text appropriate in length for the exhibit, and whether or not some sort of censorship is required (Elliott, 2006).

In order for content to be understood, we explore the audience and how they find their way through the exhibit easily and successfully. Wayfinding approaches used by the designer will make certain that the audience is able to understand the exhibit. Designers learn about the project to appropriately design a route through the exhibition space.

The design team’s goal involves several issues. What will be needed to determine the number of ways into the museum? What will attract the visitor to the main entrance to the exhibit? Will a map, pamphlet, booklet, catalog or an informational sheet be used? Or will there be some sort of arrows or color lines on the floor, or color coordinated rooms that will lead from one room to the next, or will a wall map be located just prior to entering the exhibit area? How will the visitor move through the exhibit’s environment?
After learning about the client’s needs, about the audience, the content, and the problems solved by appropriate wayfinding, the exhibition designer must now rely upon their own expertise to create functional, entertaining, and interesting spaces. Designers are hired because they are trained in the use of the tools of the visual communicator. How are those tools to be professionally employed? This is the challenge that a designer must face. Designers work with many types of tools and media. There are both restrictions and demands on the design decision and process (Elliott, 2006).

The decision process is made harder as designers select particular tools to create the graphics and visual elements. What type of textual graphics tool will be used to place the material? What type of wood board or paper backed surface will be required for mounting? Must materials withstand light systems and the heat produced within the interior environment? What is the best surface to use? Will the client be using new media technologies systems or audio visual monitors? Complementing text and illustration decisions are the decisions regarding color. The museum exhibition designer faces a range of problems that must be resolved (Elliott, 2006). Color choices must be made regarding photography, signage, type, timelines, and every other graphic element of the design. Additionally, color may be important in creating a proper wayfinding strategy. What colors are most appropriate in a display concerning nineteenth century warfare? What effect does color play on the mood or emotions of a visitor? The client may have favorite colors that should not be used for a particular exhibit. When is particular color usage appropriate?

The intended audience must also be determined. What is the targeted age? Is it K through 6 or 6 through 12? Is it older adults or younger adults? Is gender a factor? What type of group of
individuals will view the exhibit? Is it a particular culture or cultures or sub-cultures? Is it a particular race or society? Is religion a factor?

When the design theory, exhibit theme, wayfinding approach, color scheme, and audience are determined and accepted by the client, the exhibition designer must then move to the production aspects. Designers are both the creator and a producer. They are responsible for making decisions regarding both creative aspects and the physical production of the exhibit. A client will often change the design at this point because of factors not recognized earlier in the decision-making process.

Production involves many factors and changes. These range from bidding and budget concerns, equipment cost, and artifact handling. However, the most important of these is the budget, including the cost of insurance, as well as the cost of safety and security for objects in the collection. These costs can be enormous, meaning the client may have an over-extended “creative idea,” wishing for more than they could afford or was required for a successful exhibit. Design and fabrication work bids that are too low or too high may require time extensions which will delay the exhibit’s pre-planned opening. Print media technology has often caused economic concerns and time management problems. The fabrication process can strain budget and bidding strategies.

Finally, when the exhibit is installed, the exhibition designer should conduct an analysis of the design. Professionals learn from client analysis, from audience survey, and from other strategies used to determine how successful or unsuccessful the final design is. It is important to have some type of evaluation done on the new or existing exhibit. This is the time for the improvements necessary in order to maintain exhibit success. There are many questions and tests to be conducted. Design is a process that creates a visual pattern. What makes the viewer find an
exhibit appealing? What type of design is logical for proper visual observation? Can the visitor obtain information and or historical knowledge from the exhibit? Are they learning?

Both artist and display planners determine what goals the exhibit must achieve. Other questions focus on how the sound system works. Is it effective and audible? Is the content accurately presented?

The evaluation of the content must be tested. The process of evaluation can be done in several ways. A good approach is through public surveys, a questionnaire, or an observation study. Whichever way is used, the analysis must produce the knowledge required to determine exhibit change and progress. If the questions are properly asked and answered, it is more likely the design decisions will be good ones. In that case, the exhibit will be successful.

It is hoped an exhibition designer will be able to use the following chapters as a guide to correct decision-making. The answers to the designer’s questions result in a descriptive study guide and a description of the particulars of the design process. This provides a guide to the decision making process. This guide is aimed at anyone involved in information design systems or exhibit design.

**Informational Design and the Informal Settings in a Museum**

Museums can act as a learning environment, producing a proper background or habitat for study and research. People learn very little when they are simply observing. However, they are forced to learn when placed into the setting that is the well-designed museum. Some visitors are paying attention. Some are not. But they are all viewing objects, making some sort of sense
of their observations. The levels of learning, and the desire to learn, depend on subject matter. Most agree that the public have prejudged views regarding their own interest in an exhibit. According to Thomas Elliott of the Cherry Valley Group and William Sawyer of the Willet Center, visitors have a particular fascination towards certain subject matter. Museums cannot always successfully estimate what will best draw large amounts of people to their doors. However museum staff agree that communication between public visitors and themselves is important.

This form of communication and its understanding must be reformed and or remodeled. Communication researcher C.G. Screven suggests two particular views and models that provide a solution to this problem. Screven has noted that many researchers have studied how the brain functions.

By understanding how we learn and the many levels of learning of which we are capable, these studies have provided experimental data that can be applied to signage design and informational design. Museum staff and designers have learned to look at the psychology of the human learning model. This learning model is centered on several factors regarding the audience: how they learn, what they learn and when they have accomplished their learning.

Attention span and the particular behaviors a visitor demonstrates can tell us what message they have learned and the way the information was delivered. Experts who study this area believe that the message gathering method is based on a “required” and or “non-required voluntary level” (Dick, Carey, 1990). Visitors who travel to see a museum and its contents need not pay attention. They are free to attend and free to ignore, and free, as well, to distort meanings. This is why it is important to understand and design informational systems that do
more than reflect the needs and particulars of the intended audience. Designs must ensure that attention is held, and learning occurs, for the entire span of the exhibit.

**Case Study: Project Parameters**

This paper uses case studies involving different museums and their exhibition design. The museums are the Oneida County Historical Society, The Children’s Museum of Utica, and The Marcus Willet Visitors Center at Fort Stanwix in Rome. Information was developed through interviews, observations, design planning sessions, and staff meetings.

We will first look at the differences between the facilities. Where are they located and how long have they been in operation? Do they have different funding support streams from government and private donations? What are their long and short term goals for the communities they serve? What are their annual and monthly exhibit goals? What type of decision-making system processes do they provide and follow?

**The OCHS Project, 2005-2006**

The Oneida County Historical Society planned a new exhibit to be available to the public in February 2006. The exhibit would be designed to illustrate agricultural conditions in Oneida County and the regional area during pre-settlements through present day. The OCHS, museum staff and board members were able to hire The Cherry Valley Group (an exhibition design firm) to help, interpret, plan and develop their exhibit.
During their primary study of the OCHS project, The Cherry Valley Group was confronted with two major problems: financing the project, and the existing structural design. To help overcome these obstacles the historical society asked me if I would assist and represent OCHS. It was my responsibility to sit down with Cherry Valley and provide guidance, observe initial work, suggest ideas, and discuss revisions.

The first conversations regarding the Oneida County Historical Society project occurred in February 2005. The director of the OCHS, Don White, asked me to consult on a new exhibition design. I had first met Mr. White in May 2000; we had worked together on a previous, successful project involving the design of eighteen signs for the Central New York American Heritage Interpretation Trail project.

In January 2005, the Board of Directors of OCHS had approved the creation of a new exhibit. The subject would be the history of farming in Oneida County. During my first meeting with Mr. White, we discussed finances (the intended funding was come from grant and donations), the existing space available to the exhibit, an illustration program to be developed by Society researchers, and the responsibilities of various contributors to the project. It was decided that I would serve as a design liaison to the firm, The Cherry Valley Group, responsible for the exhibition design.

As will be discussed, in meeting with The Cherry Valley Group, initial project parameters were established. These included: duration of the exhibit, number of pieces to be included, type and number of charts and graphs, and the structural layout of the exhibition. The Cherry Valley Group were concerned regarding the entrance to the exhibit; their proposed resolution is discussed in Chapter Four, Wayfinding.
After our first meeting, plans were made to return to the Society for a walk-through of the space available for the exhibit. During the walk-through, a proposed budget and layout was developed, to be submitted to the Board. At this point, in late February 2005, specific details regarding fonts, type size, color, timeline content, and the size of panels were not discussed.

A preliminary plan to develop the exhibit was created at the cost of $10,000. The plan revolved accessibility problems. The exhibit would consist of a single room (forty feet wide) containing a timeline on a fabricated wall, eight display cases measuring approximately 30 inches wide and 60 inches high, and twenty-two artifacts relating to farming in Oneida County (such as tools, soil samples, and product samples). Display area topics included the architecture of farming, livestock, types of soil, a selection of products cultivated in Oneida County, and a history of native and non-native farming tools.

The Proposal was submitted in written form. No sketches were developed. It was planned that I would create a series of proposed visuals to explain the design spaces to Board members.

Because the design team had been told the project had to begin in May 2005, the proposal was developed quickly (perhaps too quickly). Board members received the proposal in late March 2005. The Board met to discuss the project. After determining that the development cost might well exceed an additional $15,000, the Board tabled the project. A potential revival of the idea was discussed during the summer of 2005; Mr. White inquired regarding the possibility of less expensive design firms. Because the Board was concerned that monies could be raised, the design has not been completed. The report is consisted by the board to have proprietary content; unfortunately, rejected my request to include the report as an appendix to this case study.

The lesson from this particular case is clear. Directors of a museum must confirm, before expensive initial design studies are conducted, that sufficient funds to complete the project are in
place. In this case, because the Board and Mr. White were unfamiliar with the process and the range of costs involved in professional exhibition design, the OCHS spent $10,000 for an initial plan that never had a chance of being completed.

One means to prevent this type of problem is to have permanent and sufficient museum staff. A professional curator and a visual information specialist have the knowledge required to understand that exhibition design is both an informative and expensive process. In this case, no one at the OCHS had this necessary knowledge. The plan remains incomplete today; the Board continues to believe the project may be completed at some future date.

The Willett Center

The Maricus Willett Center, located in Rome, New York, is a recently added facility to the Fort Stanwix, National Park Service site. The Center educates visitors about the life and military role of the Mohawk Valley during the Seven Year War and the fort’s role during the American Revolutionary War, siege of 1777.

The study I conducted was intended to acquire information about techniques, the type of process or processes that are used to develop this type of Center, and how to design internal exhibits with more modern audio/visual components.

My lifelong interest in the history of Oneida County and the Revolutionary War led me, in the year 2000, to a purposeful visit of Fort Stanwix National Park. Although I had visited the site many times previously, this time I was developing an interpretive signage project, The Revolutionary Heritage Trail; two of the eighteen signs of the Trail were to be installed at Fort Stanwix. During discussions regarding the signage, I had the opportunity to view sketches for a new facility that explained both the history and the culture of the Fort. The proposed Willett
Center was designed to prepare the visitor for the educational experience within. The Center design was created by Einhorn Yaffee Prescott Architecture and Engineering PC (EYP) of Britain. The proposal seemed both interesting and creative; it was approved by the National Parks Service and completed in 2005.

Visiting the Center after its completion led me to an immediate understanding regarding specific design decisions that had been made. The typography, a combination of blue and black letters, seemed somewhat small, especially for a visiting public that would include both youngsters and senior citizens. The combination of serifs and sans serifs was appropriate; the tan background was quite effective (black type on a brown background is one of the most legible type color combinations). The graphics were underwhelming; many images would have been more effective if reproduced larger. It seemed that the designers simply wished to include too much information in too small a space. My concerns led me to ask a museum staff member, William Sawyer, whether he noticed any specific design problems.

Mr. Sawyer’s answer led to a focus point of this case study: the entranceway to the theater, which is thoroughly discussed in Chapter Four: Wayfinding. What Mr. Sawyer saw as a poor design decision was related to funding; as will be discussed, the solution to the most easily identifiable design flaw in the Center was available as early as 2005. The money to fund that solution was not. As of October 2008, during a tour of the Fort conducted with my students in a Visual Communication course, the wayfinding problem remains unresolved. I discussed the problem with them; they quickly understood and provided their own solutions.

The conclusion, in this case, is that a new design, fabrication, and installation is now required (or the design problem will remain). Although the original cost of the Willett Center was six million dollars, funding cutbacks resulted in a version of the Center different than
originally planned. The designer’s original concept was altered to reflect the realities of funding. In this case, the design flaw was the result of budgetary constraints. As Mr. Sawyer explained, the potential of a superb design was sacrificed because money simply was not available. In this case, the fixed budget of a governmental agency overrode design concerns.
Chapter 2: Audience

It has been said that museums are approaching a new era. Chief among the changes regard how to create a presentation. Planners expect an exhibit includes educational justification where in the past education was an additional benefit. Technology modifies the museum viewing experience, while traditional methods remain. This is the moment for instance when science and 3D cinema come together, creating a new way of expressing, for example, the dinosaur’s world.

Those enormous creatures of the past have always gripped the interest and imagination of humans. For over 160 years the story of the dinosaur has been a fascinating tale told by skilled individuals, educators, and museum designers. All children museums are caught in this grip of interest. Visitors demand that natural history museums present information about dinosaurs, especially after movie goers saw the film Jurassic Park. Viewers pressed for more examples. The desire to touch and the ability to handle was missing when seeing film.

This was the case facing the Utica Children Museum located in Utica New York (Allan, 1993, 1995). The staff at the museum decided that they needed upgrades to their existing “Dino” exhibit with more “hands- on” projects and events. My connections to the Children’s Museum began 1993; the director, Jeff Chard requested that I assist in the creation of a three dimensional dinosaur display. The exhibit, which was developed as a volunteer, was completed in the same year. The project was the beginning of a four-year relationship with the Museum. One of my continuing interests was the dinosaur displays.

Early in 1994, the museum targeted their existing exhibit dinosaur created by Lewis Brown. Mr. Brown was an artist, an adventurer, and a writer. He had a deep passion for dinosaurs. During the 1980’s, Mr. Brown donated his time to the construction of several exhibits for the Utica Children’s Museum (Allan, 1993, 1995).
Sculpting from paper, wood and a special mixture of bee’s-wax, Mr. Brown hand created the landscapes and depictions of these incredible creatures. (Allan, 1993, 1995) Using newly discovered information and new scientific methods, Brown was able to portray dinosaurs with the newest visual information, properly portraying their environment and structures. He was considered, by many in this field, as a leader among designers and artists, making his exhibits a very special viewing experience (Allan, 1993, 1995).

As the 1990’s approached, I notice that earlier displays began to break down, crack and in some areas rot from moisture. A decision by board members to save and repair the exhibit was made. The board turned to several local young artists and woodworkers to restore the aging display. When approaching a project of this type, the designer must evaluate the exhibit and determine the cost of repair. Questions and concerns focus on the existing layout and what can be saved. Once this is determined the next step is to establish realistic goals.

One of the goals for the Children’s Museum was to have exhibits that were “hands on.” This type of experience provides an approach that guides the visitor with visual communication and a recognized educational learning process and changes in viewer’s expectation. Existing displays and their contents were not or could not be adapted to this new approach. After a careful evaluation of the existing dioramas and wax models, it was concluded that the earlier artistic materials were too delicate for hands on exhibits, as were the illustrations and paintings (Allan, 1993, 1995).

The original exhibits, display cases and their layout did provide correct viewing conditions, including the proper observation height for children and young adults when viewed within the display cases, “visual spacing” appropriate to the display, and as required, correct
lighting systems. However, the instructional content of the exhibit and some of the information presented about prehistoric life were outdated.

Examining this case study provides insight regarding how an exhibit can lose the interest of the audience and, therefore, its purpose. Chandler Screven, director of International Laboratories for Visitors Studies, has written a journal article regarding visitors and their experiences in museums. He explains that much of today’s focus for museums is on educational.

Screven points out that the museums are a natural informal setting offering pure untapped potential communicating social, cultural and scientific information, correcting misconceptions and improving attitudes and cognitive skills.”

According to the Children’s Museum, was a change to enhance these areas, update the scientific information, and create new interest. Our group, along with museum personnel, created several tasks necessary to help achieve this goal and bring the exhibit up to contemporary standards at a low cost.

These tasks included:

1) Clean and repair the existing Lewis Brown displays.

2) Add seven new dinosaurs with display cases.

3) Check content and update scientific information.

4) Add a sound system to enhance visual impact for visitors and to enhance the over-all experience of the displays.

5) Create a new name or title for exhibit.
The first task, cleaning and repairing was precarious, and took more time than the others. Great care was taken to assure that nothing would damage original workmanship. This first step, to clean the existing Lewis Brown displays, also allowed the team to check and record the sculptured figures for their artistic styles and concepts. We also examined Mr. Brown’s approach to the fabricating process, and the special techniques he used.

The second task consisted of adding seven exhibits. This task allowed the team to produce several new dinosaurs for the exhibit. An examination was made of the exhibit that Lewis Brown created. Recent publications and new discoveries helped to determine what new dinosaurs could be added to benefit the existing exhibit.

The third task was to reexamine existing text and terms, update descriptions and correct any early scientific errors. The team also added seven new dinosaurs to the exhibit and placed them in movable cases. Early educational direction by most museums resulted in exhibits focused toward older and more mature audiences. Carliner, (1987), observed that originally museums provided no “hands-on” experience. Less interesting text and visuals provided a visual field guide for learning.

The Children’s Museum’s goal is to expose viewers to events and individuals in a particular time of history. Thus, the responsibility placed on a museum and its designer is high; the execution of proper function, display and text is important. The primary goal is the message; it is the purpose of an exhibit’s existence.

Museums rely on many factors for their existence, but the factor that outweighs others is “audience”. Designers must understand who they are and what ways can be used to create attraction, impact and teach them (Witteborg, 1984).
The best strategy is to focus on finding what type of “public education” the visitors will receive. Education is the most important contribution to our heritage, country and museums.

_A Report of the Commission on Museums for a New Century_, 1984, researched the role of museums in American culture and society. The commission concluded that “six conditions” had to be approached before an exhibit design is created. The first set are: What are the “pressing” needs with which museums are concerned? What is their projected growth and what is the required care of museum collections? Secondly, museums must fully appreciate their own goals including their relation towards educational institutions. What cooperation is required between museums and the cultural and educational institutions? Thirdly, the museum’s organizational structure must reviewed, including their system of authority and their need for reexamining their mission to meet future demands and needs of the public. Fourth, museums must adequately describe or promote the contributions they make towards the quality of the “human experience item” and then “market” their assets.

The fifth, museums must participate in the diversity of the community of fellow museums and must be fully representative of the diversity of the society they seek to serve. Museums must commit themselves at all times to engage in a greater focus on diversity. Sixth, and finally, there is no adequate synopsis of the typical American museum. Information concerning the museums must be collected (Witteborg, 1984).
Chapter 3: Content

To increase the variety of museum exhibit themes, designers and the museum staff rely on innovative interpretive programming. Museums are confronted with new tools that aid in education. The most substantial tool is the Internet; it is the most popular medium for a virtual presence, for obtaining information and as an aid in learning. Its presence has changed the way museums are viewed today. However, even with this growing change, other newer forms of visual tools are competing with brick and mortar museums.

A modeled system approaching the problem of instructional design for museum exhibit is presented by the Dick and Carey System (Dick, Carey, 1990). Dick and Carey provide a process that first identifies instructional goals and ends with evaluation. The multi-stage process facilitates the designer’s task by assembling a sense of the complicated problem, and then breaking down the complex instructional design of the exhibition space into far more easily manageable units. The Dick and Carey model also helps to assign workloads, moving the designer’s direction from content and towards way-finding, design planning, sense making, and producing.

The museum staff is responsible for informational content. They must decide what is appropriate for a particular exhibit. The designer must take care to ensure that the clients take full responsibility for providing all the parts of the visual and textual puzzle.

When the museum staff has completed its task, the designer determines the appropriate media and format to present content. The designer present information in a way that is interesting to today’s audience. The effective design results in a museum exhibit that is educational, informative and attractive.
Chapter 4: Wayfinding

The term “wayfinding” is defined as: a design approach that acknowledges the ways people maneuver through information. –White, “The Elements of Graphic Design,” (2002, p. 29).

White explains that although “wayfinding” places less attention on the artistic finish, it can provide movement through “white space” a term graphic designers use to describe a blank section of the publication not used to display text and images.

Within any design, wayfinding is a critical component: it provides a visual map or path that makes sense of signage or visual communication aids. When exhibitors plan, they imagine how visitors will move through a display. The pace and rhythm is important: moving too slowly causes long lines and bothersome delays; an exhibit viewed too quickly may mean the exhibit lacks engagement and visitors may not get the intended information.

Both the planner and designer need to direct the visitor’s attention and movements. Does the visitor observe the display easily? Does the visitor become lost or begin to feel crowded? The allowance of flow or space throughout the exhibit is more like a game of “arrange the furniture” than design (White, A., 2002, p. 31).

*Universal Principles of Design* by Lidwell, Holden, and Butler (2003) illustrates decisions made in the process of design, explains the process of wayfinding, and demonstrates the use of spatial (space) and environmental (room) information to navigate to a destination. In this book there are four stages to be determined. The first is “orientation”, the second “route decision”; the third is to “monitor the route” and the fourth is “destination recognition.”

The sense of character an exhibit possesses will perform an essential part in the
wayfinding process. Character may be provided by subject matter or material, background, informational panel, display cases, and color.

I have observed two museums: The Oneida County Historical Society and The Willett Visitors Center at Fort Stanwix (see fig. 1, 2, 3).

The entry points to both museums are very important. They establish the intent, the attitude, and the fundamental value of the museum’s exhibit strategy.

According to exhibit designers, the entry point acts as a book’s cover. For most of us, the judgment of the book’s intent is often made by its cover, and in doing so the initial impression is made through a system of judgments of the environment. For example, the entry into an internet-site must have a clear sense of purpose and navigation. Similarly, in the entry to an exhibit, the visitor must understand direction and intent.

Upon walking through the entry points of the 18th century exhibits, The Willett Visitors Center illustrations and images tried to provide a declaration of instructional theory. The conclusion made by most visitors agrees with the assessment expressed by the staff of the Marinus Willett Visitor Center in Rome New York (Sawyer, 2006). The exhibit is a journey focused on life during the American Revolutionary War (see fig. 4).

The front of the entrance to the exhibit is bank by two projection theater areas providing a large standing and sitting environment. In front of the entry point is a post not typical of the structure. The post is wide enough to cause a separation between incoming visitors. Mr. Sawyer explained that the post was intended as a divider, providing an instructional example of decision making. The designer’s intention was to force visitors to pass through either side of the post (left or right) of the entrance, choosing what side to take, whether patriot or loyalist (Sawyer, 2006), (fig. 6).
The main objective of this project was to protect archeological and cultural resources, enhance visitor arrival, provide thematic linkages to other sites, create a sense of place and context, improving park operations, and enhance community involvement.

The Marinus Willett Visitors Center provides a excellent pre-visual history and understanding of Fort Stanwix during the Seven Year War and during the Siege of 1777. Tours of the fort are arranged from the center.
Investigation of Design Successes and Dissatisfaction

According to The Cherry Valley Group, the entry point to any museum exhibit establishes a sense of importance. It creates intent, attitude and the fundamental value of the museum exhibit’s educational goals.

Approaching the Willett Center entrance, the visitor first walks through a divided entrance into a theater. Visitors can sit down and watch a short presentation about life in the Mohawk Valley during the American Revolution (White, D., 2006). Early design research found that the formal existing theater, within the fort, was too small. The presentation in the theater was too long and too controlled (visitors could not leave the room during the presentation of the film). Visitors seem locked in to a single room location. These results are based on observation and surveys (Guiney, Mackay & Miller, 2000) of past visitors. Exiting the space, may have left visitors disinterested in the film or the remainder of the exhibit.

The decision was made to have an updated and functional instructional approach, allowing the visitor to partake in an educational experience, to sit down or to individually decide when it was ideal to leave and continue toward the visitor’s center. The new design of the theater is an open space. This room is more inviting, and spread out giving visitors more individual space.

Viewers may stand or sit in this space and can leave at any time. The designer’s intention (White, A., 2002) was to move people, as quickly as possible, into the actual fort and exhibition spaces. The objective was a more comfortable and more engaging first experience.
Case: The Entrance Graphics

The graphics within the entry point to the Willett Center museum provide informational sections on life during the 18th century. These graphics describe about social status, labor, farming, family living conditions, politics and political parties (Sawyer, 2006), (see fig. 6). For example, one graphic informs the visitors regarding class distinctions between farmers and landowners. Each section gives a personal story, provided by an eyewitness account presented as a video audio presentation. As the visitor moves from each story monitor, information is built up regarding each time period and is directed to the next entry point. The conclusion is the theater presentation.

Before entering the theater, there is a dividing post, providing visual information concerning the two types of flags representing political factions (patriot and loyalist) encountered during that timeframe. The information board posts the visitor a question regarding what side they would take during the American Revolution.

The staff of the Willett Center believed that this part of the exhibit did not function as it should have. On many occasions the staff observed, and indicated that, visitors bypassed the graphics without noticing or receiving any idea regarding that information was there. Staff concluded that this was a design failure.

The main entrance to the theater has large panels of information that are intended to create a “funnel tunnel” directly into the theater. The entrance is flanked by two panels, located on either side.

Each panel illustrates a flag, one representing for the Colonies and the other, England. The Thirteen Colonies are represented by the Grand Union flag, similar to our current flag but containing, within a blue field, the English red cross of St. George and the Scottish white cross of
St. Andrew. Representing loyalty to the King, the British flag is hung opposite the Grand Union. A brief history of each flag is provided with information pertaining to the ideals of each political party.

The next focus point is a post located in the middle of the entrance. Visitors must navigate left or right in theory, making a decision as which to side with either, the Colonies or England. Staff observed that the location of the panels and the position of the post did not attract sufficient interest for visitors to realize they were making a decision. Because they were not asked, visitors often did not understand that they were making a political decision when they moved left or right. Design did not function as a wayfinding device (Sawyer, 2006), (see fig. 6).

Suggestions for design improvements were made by designers and museum staff. Once they were conceived, the exhibit was re-evaluated. In most cases, according to exhibition designer Thomas Elliott, principal of The Cherry Valley Group, the evaluation is a good way of determining how successful the designer or exhibitor has done their job. Evaluation also may determine if a modification may be required. An exhibit may be made better after viewer input. In this case it was suggested that a viewer survey was to be conducted; suggest was not implemented.

A museum experience may be made comprehensible. In this particular case, it was determined that a clear decision was needed. Suggestions from the Cherry Valley Group included using color, larger text, greater emphasis on imagery, and a brochure explaining that a decision was about to be made. After discussions between the museum staff and designers, the conclusion was that the graphic content must be improved. However, the decision made by the Superintendent was that the cost of new graphics was prohibitive. The Center’s solution was to place museum staff at the entrance; visitors are personally informed that the left / right, patriot/
The main entrance to the Willet Center allows the visitor to become part of the exhibit with audio visuals and highly detailed graphic displays.

Note center, the entrance to the theater is flanked by two panels and a pole to provide a sense of choice and division of the political atmosphere that was felt during the American Revolutionary War.
loyalist decision is about to be made. Designers from The Cherry Valley Group had suggested solutions that did not require staffing; thus far, these suggestions have not been implemented.

**Evaluation**

The evaluation process is a form of constructive critique. According to Witteborg, the main purpose of an exhibit is to provide pleasure, education and enlightenment. It conveys information, increases interest, and reinforces learning. Existing beliefs and attitudes are reinforced (Witteborg, 1984 p. 14). Thus, Witteborg explains, the evaluation process is a proven tool to ensure value, to improve, and to enhance performance.

A research paper entitled “Exhibition Evaluation” by The Audience Research Center located in Sidney, Australia, provides a four-step process for museum evaluation. The four steps are: front-end evaluation, formative evaluation, remedial evaluation, and summative evaluation. The process gives the designer and museum staff an opportunity to look at each stage, and to address and to test the effectiveness of content, graphic message, and informational theme, (Australian Museum, 2004).

*Formative Evaluation* occurs during the design stages, which may have been overlooked when studying the Willet Center case. This process of evaluation examines each design stage to determine if the project direction is correct and is being followed. The process requires an inexpensive prototype display developed to detect and isolate problems (Witteborg, 1984, p. 22), which will be discussed next.
Before the evaluation starts, the goals and objectives must be reviewed and clarified. Based upon my interviews, several questions were developed that can be used to review and determine the goals of an exhibit. They should be asked before a clear and precise evaluation can be performed.

Using the Willet Center as a case, the following questions are asked (Sawyer, 2006).

1) Are the visitors using the interaction entry or post as the designers intended? The Superintendent explained that during several observations the design was not influencing the visitor to make a choice. Hence the visitor did not understand that a choice was to be made. His conclusion is the design was not working as intended.

2) What is the visitor’s understanding of the message when looking at the entry exhibit display? The visitor should take a survey or be asked a question about the decision at the entrance point. Did they make a choice? Did they understand the content? Did they find content informative?

3) Is the entry display strategically placed and defined? The display is placed in the correct position. However the size should have been increased. The small entrance was not sufficiently noticeable and was lost within the larger outer wall panels of the exhibit.

4) Are the display entry information panels accessible to all visitors, including visitor with disabilities? The Visitors Center staff pointed out that access to the theater was determined by the width of the entry point. After measurement by the staff, it was determined that the entry point was marginally able to fit a wheelchair.

The entranceway was not deemed wide enough to be inviting if a visitor was handicapped. The staff reported conversations with designers that explained the reason for this problem (Witteborg, 1984, p. 24).
This design deficiency was caused by the designer’s intent: the designer believed it was more important to restrict the width of the entrance, hoping to make the choice between patriot and loyalist more obvious.

In practice, neither accessibility nor designer’s intent was achieved. The entrance was too narrow to be fully accessible. But the informational panels on either side were spaced too far apart to be properly noticed by the visitor, a perfect example of a bad design decision and its result.

5) Are the graphic and text information labels easily legible and understandable? This question concerns the way the information is presented.

Observation of the panels and interviews with visitors indicates the text is too small and is not immediately legible. The visitor’s Center staff report that visitors believe the graphic and visual imagery overpowers the text, causing ambiguity and directing the visitor away from the intended message.

6) Are the graphic and text information labels or the written visual guides clearly written and stated? When the viewer stops and views the panel, the text is decipherable and comprehensible. It was determined that text size and the amount of information are adequate, however the Center’s staff concur in pointing out that the attractiveness of imagery distracts the viewer from reading the text.

7) What general meaning or feedback are the visitors obtaining from the exhibit? Are they creating an experience when they observe the exhibit or display? Willett Center staff members point out that the intent was to create easily understood displays of information. Any group of individuals of a certain age and mental ability could be educated (Sawyer, 2006).
Case Study: OCHS

The second museum, the Oneida County Historical Society, was observed to have a similar objective as the Willett Center: its aim is to provide access to accurate historical information. However, designers on this project see the entry point differently from the Willett Center. First, the Oneida County Historical Society is not of new construction and is not on one level. The museum has two levels; there are stairs and an elevator that may be used to reach the exhibit floor. In the front or main entrance the entry point is clear but requires an informational board (Elliott, 2006).

The Cherry Valley Group designers observed that if a visitor were to enter from the rear entrance they too would need to have an information board to help guide them through the exhibit. Once the visitor determines the proper direction to take, the exhibit requires visuals to keep visitors interested and to provide proper wayfinding.

In this case, unlike the Willett Center, this exhibit has not yet been constructed. The Oneida County Historical Society staff is still attempting to predict the wayfinding method, pace and rhythm of their future exhibit. To do so the staff has looked at the results of The Cherry Valley Group’s observations and developed several questions before work begins. As in the first case study, these questions can be used to review and refine the goals of this exhibit.

1) When the visitors use the front entry, do they understand which way they must proceed? When the visitors use the rear entry will they be able to understand which way to proceed? The staff point out that the front part of the museum is primarily set up for retail sales. The sales area blocks the exhibition area, thus making it perplexing for visitors to determine where to begin.
The rear entry has two levels. The first level is reached by elevator from the basement level. The basement level houses the library and a storage area for the museum's archives and artifacts. The elevator provides both an entrance to the museum and a way for visitors with disabilities to access the exhibits.

2) When the visitor’s interaction with the exhibit begins, how does the information assist the visitor? Do they comprehend the next intended direction of the exhibit? Did the visitor understand the wayfinding properties of the information board? Did they also understand the content, and did they find this content informative?

3) How will the display entry board be strategically placed and defined? There will be a need for two informational display boards, stationed at both the front and rear entry locations.

4) Are the display entry information panels accessible to all visitors, including visitor with disabilities? Are they the proper height? Is the text proper size? Will a visitor in a wheelchair have sufficient room to move close enough to the board to read the information?

5) Is there a clear sense of the overall purpose and scope of the exhibit outset?

When these questions are answered, the staff and designers will proceed to create the exhibit. Observations from the Willett Visitor’s Center provide a basic working template that teaches us what not to do and how to proceed with the Oneida County Historical Society exhibit. They should be not used to predetermine a conclusion. Observations done at the Center do provide, to other museums staff and designers, useful tools and clues that may make an exhibit function better.
Chapter 5: Design

Design strategies and decision making are determined at many levels. Some decisions are based on client requirements. Others are decided by the designer’s visual evaluations. Before explaining this part of my research, an understanding of basic design components is required.

Design should be understood as a “process” rather than as a “result” (White, A., 2002, p. 1). The design process begins when the designer determines what the problem is and defines it. Second, the designer must know the material, insuring an understanding of what the client does or produces in his work environment. Third, designers gather and separate the most essential informational elements and ideas, selecting them from the mass of other less essential parts. Fourth, the material is organized and abstracted. Important ideas will be prioritized so that the visitor can understand the message. Finally, these main elements are brought together in an educationally effective manner.

Design Concepts and Application

Designers follow a set of rules. The intent of these application sets is to allow the designer to plan properly. Thus to design is to “plan” or to make a visual scheme.

A designer, using their talents, takes the necessary steps to create a plan that ends in the development of something that will be viewed in two-dimensional or three-dimensional form. To embark on this process, careful planning and skillful decision-making choices are required.
An interesting, informative and entertaining exhibit must contain a *superb* set of design elements or a “*virtuous*” set of design applications (White, A., 2002). Thus an exhibit is successful only if it provides the visitor with *superb* informative outcome, allowing these applications to be present within the design (White, A., 2002, p. 2; and Wedman, Tessmer, 1993).

These components are: Gestalt / Repetition, Composition, Space, Color, Communication, Content. Each of these applications must be present for a design to work properly. *Gestalt* involves unity and harmony; the basic principle is that images are first viewed as *unified wholes* before an individual sees them as distinct parts. A viewer sees the *whole* before they see the *parts* that construct the whole.

*Repetition* occurs when a viewer sees an individual designed component used more than once. A set of informational panels in a museum helps the visitor find their way from panel to panel, moving through an exhibit with ease.

*Composition* maintains a visual focus point of the design. A good composition of text and images allows a viewer to look at a panel and immediately comprehend the intent.

The components of *Space* and *Color* are related. Space presents a way to convey emptiness or isolation in an exhibit, allowing a visitor to pay more attention to a single spot, a lighted information panel or a well displayed item. For example, the time lines at the Willett center are highly detailed graphic displays that require a bank of over lights.

*Color* allocates emotional attraction, creating moods. Happiness and hate can be produced, changing the quality of an exhibit’s appearance and intentions. The usage of colors is quite complex.
Color used properly can convey idealism, age, culture, politics, social values, temperature, and much more. In a display regarding the American Revolution, the usage of red and blue convey the intended message of the politics and patriotism.

Communication is necessary; this design application is often accomplished by text. But not all visitors can understand what is written or comprehend the text. Individuals speak and use different languages. The best solution may require sound or music that is accompanied with strong symbols, icons and images, communicating both thoughts and feelings. For example, The Willet Center introduces the visitor to particular characters of 18th century life. This arranged set of characters, including carpenters, farmers, and land owners, talk about their experiences in an audio and video presentation. This content is an interesting way of illustrating the events of that time period by using new media communication techniques.

Content and communication are always combined. When any design processes meaning, the fundamental role of content is to communicate an idea. When used in a museum setting, panels of information combined with images convey an idea, often creating emotional content. Visual expressions may set the mood or theme for an exhibit. In the proposed OCHS farming exhibit, the inclusion of both native and non-native tools recognizes the entire farming history of the County. At the Willett Center, a panel informing us regarding the death of General Herkimer is both touching and informative.
Fundamental Visual Communication Methods

Information designers must use certain fundamental tools. These may include type, representative images, narrative and decorative illustrations, and information graphics. The designer must successfully combine these tools to create an attractive, informative, educational and interesting exhibit (White, A., 2002).

Type may be legibly or may be so highly decorative as to be unreadable. The designer must make decisions about type size, type face, and type color. Images must coherently be placed in conjunction with type. Images may simply show us what the world is like. They represent the real world. A graphic may tell a story or decorate. Charts and graphs may be used to convey complex information.

So what is the job of the designer? Is he or she the communicator? Do they figure out what is to be communicated? The analysis conducted by Oneida County Historical Society (White, D., 2006) determined that the proposed exhibit would educate visitors about the history of farming in the Oneida county valleys. Determining what information is to be displayed and how it is to be arranged is a necessary step in the creation of a design decision.
Attractiveness vs. Readability

Another important issue is the usage of informational graphics. There are several ways to determine how to evaluate the display of charts and graphs. The New Media of Print, by Frank Cost, provides a useful model that can help determine the value of informational media systems. Cost presents this example: when entering the front lobby of most business offices or hotels, many types of commercialized print materials (such as newspapers and magazines) are found (Cheatham, Cheatham, Hart & Owens, 1987). The quality of this printed material ranges considerably. Is there a process or procedure that will allow the determination of “quality” and “control” when determining visual appearance?

According to Cost, product quality is more a direct function of design than production. We can begin by comparing print design to the manufacture of products. Cost has developed a way of determining set values for print by using studies conducted and developed by The North American Industrial Classification System (NAICS). Their work has developed a system, along with the United States Department of Commerce, that defines three broad categories for determining the new print value factors (Cost, 2005).
The Vector Model

After reading Cost’s work on value factor models, I designed a system to be used in evaluating the museum decision process. The model would be of value and support to museum staff and graphic designers, helping them to determine the value factors of an exhibit.

Most value studies done by Cost found that value is gathered by observation of human response. Cost compared results in the print communication medium and developed a gauge to determine value measurement. He explains: observing a publishing company whose job was to mail out catalogs to homes, he began to observe how many were produced and how many were delivered. He measured the number of orders generated by the catalogs.

Cost illustrates an example of his vector model system. Its usage compares a product’s value level as determined by the public. His results are shown at right.

The column on the right shows how the product serves the public and the value determined by the public’s views and understanding of its informational value. Products are ranked in order of importance. This determined value helps the designer, in this case, to decipher what level of importance the public perceives in an auto, a television, a tax service, or print. For example, the public does not place high importance on television as a service; television is

<table>
<thead>
<tr>
<th>Products</th>
<th>Automotive</th>
<th>Television/Media</th>
<th>Tax Services</th>
<th>Print</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>HIGH</td>
<td>HIGH</td>
<td>LOW</td>
<td>HIGH</td>
</tr>
<tr>
<td>Information</td>
<td>MEDIUM</td>
<td>LOW</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>Service</td>
<td>LOW</td>
<td>LOW</td>
<td>MEDIUM</td>
<td>HIGH</td>
</tr>
</tbody>
</table>

Frank Cost Table
perceived as a product. Similarly, the auto does not provide information. It is a product that provides a service. The print designer has a distinct problem. The public demands that print be a product, be a service, and be informational.

**Applying Vector Value Model**

A modified model of Frank Cost’s initial design model illustrates an example of how a vector model could be used in determining required design factors and deciding how to design an exhibit. The star provides a visual display of the value points for the proposed exhibit. The designer and museum staff must then emphasize the appropriate value points in order to produce a successful visual exhibit.

There are six factors, which Cost calls “dimension sums”, contributing to value. For this demonstration, the dimensional points required some modification to accommodate the assessment of exhibit value. The new value points are Informative, Instructive, Persuasive, Operative, Way-finding and Comprehension of Visual (Cost, 2005).

**Demonstrations of the Vector Model**

These three vector models illustrate the values of two exhibition design proposals. Both models were given to staff members to evaluate certain parts of their exhibits. The vector graph (Exhibit Vector Model) measurements are based on a scale system from most important to least
important. The vector value is determined by a staff member who values their own experience or evaluates the audience’s reaction to the exhibit’s informational content and images.

The diagrams on following pages show us the outcome values of two exhibits. Diagram 1 illustrates what the worksheet looks like when given the participant. The following diagrams on pages 44 and 45, provide the results of the two observations.

The observations shown in the diagrams illustrate the exhibits informative value and instructional value. The persuasive and operative values are lower. The result is determined by two prime factors. There may be no mechanical or media system to illustrate this exhibit or the exhibit could require that an additional operative presentation be designed to accompany existing text and graphics.

The comprehension of the visual is high, illustrating that the design is effective. Visitors understand the content. The last value is quite low. The wayfinding value, explained earlier, is very important for an exhibit to function properly. The resulting information identifies opportunities to change and enhance the exhibit. In this case, the designer should work to improve way-finding in the exhibit.

Diagram 2 illustrates the Willett Center’s exhibit. The results are somewhat similar to diagram 3 representing OCHS. However the informative, instructive, comprehension of visuals is stronger than that measured in the OCHS exhibit. It is interesting that the observer also expressed a lack of wayfinding, similar to our case study observations explained in chapter four.
The Star Vector Model is used in determining what are the logical Importance a observer takes in from Information, Instructive, Operative, CV, Persuasive and Wayfinding parts of an exhibit or visual display in a museum. The higher the number, it is considered to be viewed more or of greater of importance during, during planning or design phase. An exhibit can be made to accommodate the studied value thus producing a quality display.
The Star Vector Model shown here was conducted by visitors and staff members at Fort Stanwix and determined the logical value of Importance of the Maricus Willett Visiting Center main entrance display. Both CV and Instructive scored high in value, thus designers focus their efforts towards CV and Instruction more than others values shown.
The Vector Model shown here conducted by visitors staff members at OHS determine the logical value of Importance of the History of Farming project would need these values followed closely during the planning and later in the fabrication process.
Chapter 6: Sense-Making Theory

Brenda Dervin’s sense-making theory (Jacobson, 1999) is a philosophical approach to the practice of communication research and the design of communication-based systems and activities. Dervin’s theory consists of a set of philosophical assumptions, substantive propositions, methodological framings, and methods. It has been used to study libraries, information systems, new and old media systems, internet sites, public information systems, classrooms, and counseling services. The approach developed by Dervin is still being expanded and transformed. Robert Jacobson acknowledges Dervin’s work in his book (Jacobson, 1999), elucidating the theory as a set of assumptions, theoretical perspectives and methodological approaches. The theory is accompanied by a set of research methods and communication practices.

Making sense of a theory

This theory would be ideal since museums do require that a visitor make assumptions regarding what they will be observing or investigating. Visitors also bring a perspective to the exhibit, influencing their own interest in the exhibit.

The theory will assess a visitor’s interest in a museum, their views, and their interpretation of the informational content. This method can be modified for any non-predictable size populations to be examined. The phenomena of viewer interest are significant in sense-making. As explained by Dervin, the viewer incorporates their own experience and assumptions to make the exhibit meaningful.
The observational and emotional power of an exhibit is dependent on how viewers use their own experiences to make sense of the educational journey. A four-year-old seeing a Matisse exhibit sees only pretty colors. A sixty year old man with an informational design doctorate sees value, communication, balance and intent.

Dervin describes sense-making (Jacobson, Information Design, 1999, p. 44) by comparing the viewer to an actor “inherently involved in their observations, which must be understood from their own perspectives and horizons.” Designers direct focus on the museum’s decision process and how these decisions impact exhibit display and fabrication. At the same time, the designer must understand that the viewer is a player in the sense-making of the exhibit. Like the actor, they bring their own perspective and wonder about their own motivation. How does the viewer understand what the museum has decided? Must they recognize the decisions that the museum has made? Do they understand its method of operation and its educational intent? Is it important that the viewer understands the inner politics of the museum?

Dervin continues with an explicit acceptance of a reality; viewers bring ordered and chaotic assumption to the exhibit. For us to access the viewer, clear observations and interviews would be justified and required. The Sense–Making theory with a qualitative case study method is ideal for this museum analysis.

In practice, this means that the designer must develop a method to test the proposed audience’s assumptions. This will allow the designer and museum staff to create an exhibit that the viewer can successfully interpret.
Chapter 7: Production

Before fabrication and production can begin, the requirements of both client and designer must be recognized. In a report prepared for the Nation Park Service, Neil Mackay and Ben Miller of Harpers Ferry Discovery Center / Media Development and David Guiney of the Interpretive Media Institute (Guiney, David, Miller, Benjamin, Mackay, Neil, 2000) theorized that there are 51 categories of specialized knowledge and skills required by the participants involved in museum exhibit development. The categories are specialized knowledge and skills required for exhibit development and or planning. These requirements are based on law, policy and professional practices (See appendix A). These 51 requirements and disciplines are divided into categories based on law, policy, and professional practices. The designer must recognize these requirements and must incorporate them in their final planning stages.

The designers must also examine how these standards mesh with the client’s requirements and concerns. The client concerns are sometimes simple and often inconsequential. However, significant client concerns do surface. When they do a designer must respond to them effectively and quickly.

The most important requirement client requirement is the schedule. How much time do we have and when will the exhibit be shown? A second factor is funding. This must be determined at the beginning of the design process, or at least be acknowledged as a fundamental requirement. Clients often ask for things they cannot afford. How much is available and will it be enough to allow research and development, fabrication, and production? Finally, how good are the designers? Do they have the skill and knowledge to successfully create the exhibit, to produce what is required?
The National Park Service, U.S. Department of the Interior, is a good example of a well-organized client. For instance, the Park Service has developed a unique procedure to be used when they commission illustrations for an exhibit. Their requirements focus on several factors, including historical content, communication value, political contend, and visual appeal. Dozens of question are asked and must to be addressed. A thirteen page report outlines the process and the steps required. The result is that scenes and individuals are properly portrayed and historically created. (Sawyer, 2006)

The case study for this theory involves The Fort Stanwix National Park (See p. 21). An illustration was required for the Heritage Trail System. The illustration was to envision an event during the siege at the Fort in 1777. Production for this project began with several meetings to determine and discuss the existing information recorded during the siege.

A research group consisting of two designers, several fort staff members, and two historians evaluated several journals and letters that described the siege. The siege of Fort Stanwix began on August 2, 1777. General Barry St. Leger and his army of British Regulars, loyalists, tories and Indians approached Fort Stanwix from western New York, discovering a well repaired and fortified position near the Mohawk River. St.Leger laid siege for 14 days. An important event occurred during the siege. According to historians, The British forces constructed a siege trench to help bring artillery closer to further damage the fort walls. This event had never been illustrated. It was decided by the research group to commission a painting of the scene. Once a clear picture of the scene was envisioned, the group determined the project parameters.
Key parameters included the necessary time, money, and material required to produce an illustration. Assessments were made of preliminary sketches to ensure that historical accuracy was maintained. Researchers determine that the illustration titled *The Siege at Fort Stanwix* was an appropriate addition to the existing exhibit (Sawyer, 2006).
Chapter 8: Post Production Analysis

Post production analysis or “field analysis study” (Guiney, David, Miller, Benjamin, Mackay, Neil, 2000) is conducted to assure that the intended display has achieved its stated purpose. This part of the design process requires a review of what is not working or is working in a display or exhibit. This process concerns both client and designer; it is necessary to determine if the exhibit or display needs improvement or structural revision.

Carliner in his article (1987) examines several points that can be applied to the process of exhibition design analysis. He explains them as “lessons” that assist the evaluation of the visual display structure and the success of the exhibit. These lessons take into account items that are always of concern. For example: Did the visitor or visitors complain that they could not find information that was useful or of interest? Were visitors staying long enough to get information from the exhibit? Did the visitor or visitors spend enough time to notice particular sections of interest even when they are familiar with the topic or information? These are some of the concerns that post production analysis should survey and analyze. A good way to conduct an evaluation of an exhibit’s operation is a survey of visitors and users.

An example of post-production analysis is provided by an evaluation prepared for the Willet Center exhibit. As discussed earlier (See p.21), the entrance was determined to be ineffectively designed. The result of the analysis shows an example of improper instructional strategy and way-finding. Visitors did not ‘read’ design instructions properly and therefore lost their way. Problem solving and decision-making took the designer and museum staff to the next step: to determine how the instructional and the wayfinding problem can be resolved. The audience was redirected without changing the design or structure of the existing exhibit.
Chapter 9: Conclusion

Creating informational graphic design for museums is laborious and demanding. Professionally, the design and information must properly function. Great responsibility is needed when a project is started. Many groups of well educated and professionally trained individuals are consulted. These groups together help determine and assess the project boundaries.

The objective of any exhibition design, and its purpose, is to create an artistic visual vehicle. This vehicle creates an effective, interesting way of displaying useful information that exhibits a social community at work, at play, or at an historic event.

The design decision-making process demonstrates how a designer uses graphic and communication tools to help design and convey visual information. Many decisions are necessary to properly demonstrate how this process happens and ends. Each of these decisions must be tested and analyzed to ensure that the exhibit functions as designed. The intent of this study was to document the many decisions made in developing and planning two exhibits. The mistakes made in those cases are often made by curators, museum staff, and designers.

The cases indicate that the foundation of a successful design is not the designer’s intent, or the need of the museum staff to educate, or a curator’s insistence that a painting be historically accurate. In order to be successful, exhibition design must be appropriately supported and funded. In both cases studied here, inappropriate funding created what the museum staff considered to be insurmountable problems. In the one case, a design flaw remains. In the other, what might have been an interesting and educational exhibit has not been created.
References


Guiney, D., Mackay, N, Miller, B. (2000.) Harpers Ferry Discovery Center, National Park Service, West Virginia.


Appendix A

1. Exhibit Planning. Museum planning is a profession requiring many specialized skills. Planner KSAs are outlined in position descriptions for Staff Curator (Museum Design).

2. Exhibit Design. Exhibit design is a profession requiring many specialized skills. Designer KSAs are outlined in position descriptions for Visual Information Specialists.

3. Exhibit Production. Exhibit production management is a career field requiring many specialized skills. Producer KSAs are outlined in position descriptions for Exhibits Specialist.

4. Graphics Research. Planners need to know how to locate graphics and film footage, and how to acquire suitable copies for reproduction. Relationships with source institutions must be fostered.

5. Audiovisual Development. Often requires coordination with the Harpers Ferry Center Audiovisual Arts group or contract AV specialists.

6. Use Rights and Copyright Law. Knowledge of copyright, trademark, and licensing laws are vital for media planners. The advent of digital graphics and web access has made U.S. Copyright Office. »

7. Exhibit Lighting. Lighting is critical to success of exhibitions, and is a career field in itself. The Federal government issues regulations regarding lawful lamps and energy conservation.

8. Writing and Editing. High quality writing and editing has always been important in exhibit development, but is often neglected as other quality factors gain more attention.

9. Object Conservation. The NPS and the profession have standards and guidelines which heavily impact the exhibit process, including the HFC Exhibit Conservation Guidelines available on cd-rom. Protection of historic objects is a critical responsibility. HFC Exhibit Conservation Guidelines »

10. Academic Standards. Information and interpretation we present must be in line with the academic standards of various disciplines beyond the NPS--archeology, history, biology, geology, design, art, writing....

11. Media Evaluation. While not a regulation, evaluation has repeatedly been noted as an important need. Seldom practiced historically in the NPS. Evaluation is gaining acceptance in the private sector.

12. Developing Illustrations. Must establish contracts and be cognizant of use rights issues and implications. Art direction requires diplomacy, knowledge of fine arts, and specialized skills. Acquiring New Illustrations (PDF)
13. **Coordination with Architects.** There are many codes affecting facilities design, with many client requirements. These must be balanced with media quality concerns. Media staff need to know how to read and understand drawings and designs.

14. **Media Contracting.** The COTR role in media projects involves dealing with multitudes of regulations, procedures, and barriers. Complete and well-written scopes of work are essential. COTR role is demanding throughout the process. Specialized and recurring training mandated.

15. **Project Budgeting.** Planners must work with complicated budgets from multiple sources. Various regulations apply, such as 17% planning/design cap, spending deadlines, varying fund source requirements.

16. **Project Tracking.** Project tracking is required for effective management, but no specific software application has been established for NPS media work.

17. **Project Management.** Formal project management is an emerging function at Harpers Ferry Center. Project management is especially critical for large, multi-media projects. Training is available.

18. **Universal Design.** Regulations regarding accessibility are rapidly increasing in scope, effect, and complexity. They heavily impact all phases of media work.

19. **Sustainability.** Exhibits and exhibit environments must be built for long-term use and value. This means higher up-front costs for long term value. Media in the NPS may need to be in place 20+ years.

20. **Environmental Concerns.** There are many regulations affecting materials and chemicals used in exhibits and exhibit processes.

21. **Energy Consumption.** There are various regulations and policies affecting energy consumption in NPS facilities and equipment. EPA offers help with Green Energy projects, but staff must be knowledgeable.

22. **Diversity.** Diverse points of view in interpretation are essential, as is the need to be sensitive to the beliefs of diverse audiences.

23. **Value Analysis.** Policies requiring Development Advisory Board review and value analysis are impacting the exhibit development process. Training, facilitation, and assistance by VA specialists may be needed.

24. **Cooperating Association Partnerships.** VC projects often require coordination with associations who manage sales operations. Their requirements must be balanced with project needs/quality. NPS Cooperating Associations »

25. **NPS Graphic Identity Program.** The NPS Graphic Identity Program has brought a new set of graphic design and public relations standards into place. The design standards are paired with a
need to present consistent messages to the public about the park and NPS as a whole. NPS Graphic Identity Program »

26. Partnering Environment. Working with partners often means working within their organizational requirements which often differ with ours. Projects must be reviewed by a steadily growing number of stakeholders.

27. Media for Education. School districts have curriculum requirements that need to be considered. Teachers have special needs. HFC hired its first Education Specialist in February 2003.

28. Developing Technologies. Media specialists need to keep abreast of new technologies in interactive media, AV, graphics, media development software, fabrication techniques…

29. Interpretive Development Program. Exhibit planners/designers need to become familiar with the Interpretive Development Program and its associated competencies, training modules, interpretive theories, and vocabulary. Interpretive Development Program »

30. NPS Thematic Framework. Developed under the NPS Chief Historian, the thematic framework sets out themes for developing media for historical subjects Servicewide.

31. NPS Curators Exhibit Process. NPS curators have an exhibit development process which differs from HFC's. Coordination with park and regional curators is important.

32. Special Constituencies. Many projects require close cooperation with groups such as American Indian tribes, Japanese-Americans, or African Americans. Project staff need to know how to work effectively with these groups.

33. Limited English Proficiency. Executive Order 13166, August 2000, requires Federal agencies to make programs and services meaningful for those who cannot speak, read, write, or understand English. Interpretive media is covered.

34. Environmental Education. This includes more than biology or ecology, touching on all subjects taught. It takes an integrated and comprehensive approach, using the "environment" as an organizing principle to include math, language arts, history, economics, geography, etc.

35. Use of Historic Structures. Museum exhibits are often located in historic structures. There are accompanying issues and regulations that impact the exhibits process. Modifications to architecture must be coordinated through State Historic Preservation Officers.

36. Interpretive Planning. Before exhibit planning can be done effectively, the planning team needs a Long Range Interpretive Plan, or the information that is normally developed during this process. HFC Interpretive Planning »
37. **Safety.** A museum environment can be unfamiliar to visitors. Low lighting levels, circulation barriers, and interactive exhibits pose hazards. Designers need to consider especially the needs of children and seniors.

38. **Security.** Especially in light of recent terrorist threats, security of visitors and park resources against attacks, vandalism, and theft is of high importance. High profile artifacts must be protected.

39. **Visitor Surveys.** Government regulations restrict the ability of project staff to solicit feedback from park visitors. Required approval processes can cause delays and added cost.

40. **Cartography.** Exhibits feature maps to help visitors visualize landscapes and geographic areas. Exhibit maps should conform to NPS and industry standards for colors, type, symbols, line weights, USGS naming conventions, and many other criteria. [NPS Maps »](#)

41. **Natural History Specimens and Models.** Three dimensional representations of plants, animals, and other natural features have long been key elements in museums. There are many technical, ethical, interpretive, and maintenance issues involved.

42. **Facilitation.** Group facilitation is a social science skill that project leaders need for creative problem solving, especially in large or partner-based projects. It is often require to mitigate unproductive communication patterns.

43. **Project Audits.** The Department of the Interior's Inspector General and the GAO sometimes audit projects, requiring project staff to keep and submit very detailed records of all project work, including memos and trip reports.

44. **Database Management.** Increasingly, database programs are being used for managing labels, graphics, artifacts, equipment, and digital layouts. This increases efficiency, but requires coordination with software managers and specialized computer skills. [Museum Exhibit Planner »](#)

45. **NAGPRA Compliance.** The Native American Graves Protection and Repatriation Act addresses the rights of lineal descendants, Indian tribes, and Native Hawaiian organizations to cultural items. Complex laws and policies impact museum planning and the management of existing museums.

46. **Oral/Video Histories.** Project staff often need to know how to conduct interviews, and techniques for capturing, archiving, and accessing the histories. Issues related to informed consent, intellectual property rights, and privacy must be addressed.

47. **Civic Engagement.** All NPS units and offices must adopt civic engagement and public involvement as the essential foundation for creating plans and developing programs. Many regulations and policies apply. Ref.: [Director's Order 75A (November 2003- PDF)](#)

48. **Museum Photography.** Just as exhibit staff may have to commission original artwork, often there is a need to photograph subjects for exhibition purposes, or to take record photos of
completed exhibits. The large reproduction sizes of exhibit images require specialized photographic skills and equipment.

49. *Original Research*. While many exhibits derive content from familiar and easily accessed sources, some require substantive research using primary sources. Such research requires specialized tools and experience. Historic furnishings projects frequently require primary research.

50. *Object Research and Acquisition*. At historic sites it is often necessary to identify, locate, and acquire historic objects for museum displays and furnishings exhibits. This involves skills in treasure hunting, object evaluation, diplomacy, and buying techniques. Historic Furnishings, Research & Object Acquisition »

51. *Typography*. The use of type is prevalent in all the major interpretive media, and its proper or improper use impacts the delivery of information and the efficacy of the interpretation. NPS work requires a high level of skill in this traditional discipline.