The development of environmental graphics that integrate functionality with aesthetics to enhance the learning environment and improve wayfinding for visitors of the new Terre Haute Children’s Museum

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This paper will discuss the issues and research support in relation to the design development of environmental graphics for the new Terre Haute Children’s Museum (THCM). The museum runs mainly on volunteer services and the development of graphics, both environmental and for identity purposes, has been overlooked due to the lack of funding. The development of environmental graphics that integrate functionality and aesthetics will serve to enhance the learning environment for both adults and children. The environmental graphics must also compliment the overall identity of the THCM. My involvement in this project is to research and develop a new identity package for the museum and design environmental graphics for the new downtown location. Raising funds for the new THCM is still underway and has yet to reach the estimated building costs, so ground breaking for the new museum has yet to begin.

With the development of a successful identity package and environmental graphics for the new THCM, visitors, both young and old, will become engaged in an interactive experience in a safe, fun and comfortable environment. Graphics can both enhance the aesthetics of a space and also become part of the learning environment. Careful consideration is required when developing graphics for a children’s museum. During the conceptual design stage, it is necessary to consider the child’s experience of signage, map reading, floor plan and exhibit navigation. The building and the graphics must work together to provide a safe, fun and functional learning environment for the children. The new museum’s mission is “to provide a rich environment for children to explore, test, and create by nourishing their inquisitiveness, encouraging participatory learning and inspiring attitudes and career choices. The museum provides an engaging environment with resources and exhibits far beyond those possible in the classroom.” This mission is the inspiration behind all graphic design decisions that have been incorporated into the new identity and image for the THCM.
The Challenge

"Environmental graphic design embraces many design disciplines including graphic, architectural, interior, landscape, and industrial design, all concerned with the visual aspects of wayfinding, communicating identity and information, and shaping the idea of place."¹ Environmental graphics can be challenging when designed for a new building, but the THCM is already an established landmark in the community. The difficulty with this particular project is to renovate the museum’s graphic identity, while still embracing and highlighting the museum’s current status and image within the community. Developing a strong, consistent visual image is the key to capturing the attention of the new museum’s audience. "Well-designed print pieces and signage communicate what you’re about."² Though the majority of the architectural layout for the building has been designed, the interior space and exhibit designs are still in the schematic stage. This is why I felt it was an opportune time to share in this community project. With an interior design and graphic design background, designing environmental graphics for the new THCM was a natural fit for my contribution to this community engagement project.

The new THCM will be housed in the old Tribune Star building at 8th and Wabash in downtown, Terre Haute. The renovation will allow for the THCM to occupy the first two floors of the building while the top floors are reserved for hotel accommodations. There are site restrictions with the downtown location and close parking is limited. However, the current plans allow for a covered drop-off entrance that will be convenient for school buses. This feature is especially important because the majority of visitors are area school children. The multipurpose building poses challenging wayfinding questions on how to effectively direct people from street and off-site parking to both the museum and/or the hotel housed within. How can the large

groups of school children entering the museum not disrupt the hotel guests? Can the two businesses work together to generate more revenue for both while still maintaining their separate identities?

Though my concern has mostly been to focus on the interior environment, it is impossible not to consider the effect of external wayfinding and graphics. In terms of wayfinding, I am not only referring to signage, architectural features, and landmarks, but advertising is just as crucial of a wayfinding tool as any. One of the most important concerns any business should address is “how to get the customer in the door.” How can the museum get people interested in what they have to offer? Getting them through the doors is half the battle. The current museum’s exhibits have suffered due to lack of funding and volunteer help. How can the new museum break free of this stereotype and attract new visitors? Importantly, for the purposes of my work, how can graphics play an integral part in generating interest for the new museum and more substantially, how can they enhance the learning environment?

Before the conceptual design stage, it was necessary to begin with gathering a collection of research on wayfinding, the child’s navigation of space, effective textural signage and standards for universal design. Data came from literature reviews, museum visits and one-on-one interviews with museum personnel. While gathering information about the specific needs of the THCM, the more complex the list of requirements became. By organizing my research, the list of components that needed to be designed began to take shape.

**The Collection of Knowledge**

When presented with a wayfinding task, the variety of elements available to the user all affect the wayfinding solution. Architecture, a universal component, is immediately read when entering an interior environment; corridors, staircases, elevators, entrance doors, rotundas,
materials and finishes, etc. These elements alone can determine decision-making and execution. The second major component is graphics; visual information in the form of maps, directional signage, identification signage, and printed materials. Developing complete, effective wayfinding systems that combine both architecture and graphics is a challenge, but a necessary component in both the safety and usability of commercial structures. Breaking these two main components (graphics and architecture) down further will help provide a better understanding of what elements are most important in creating an effective wayfinding system.

Wayfinding is a relatively new term for what designers have been doing for centuries, simply helping people find their way. Wayfinding systems have been the topic of discussion in recent publications and among a variety of disciplines within the design field, but most often, within the context of environmental graphics. Kevin Lynch first used the term “wayfinding” in his book, *The Image of the City*. Lynch refers to wayfinding devices as elements of physical form such as paths, edges, districts, nodes, and landmarks in relation to spatial orientation. These elements, though studied in the context of exterior environments, are still relevant as tools needed for developing an effective wayfinding system for the museum’s interior environment. Lynch’s influence was not seen until the 1970s when designers, mostly graphic designers and architects, began responding to the complexity of building designs and urban environments in relation to signage and graphics. The Society of Environmental Graphic Designers (later renamed the Society for Environmental Graphic Design, SEGD) was formed during this decade to give designers a way of communicating with one another about effective design strategies and to also help reiterate the important role environmental graphics can play in the usability of spaces. With such complex architectural designs and new accessibility laws, strategies in

developing wayfinding systems were raised to new levels and in high demand by leading graphic design firms.

“Wayfinding is not just signage. It is about navigating through complex spaces and integrating all forms of visual communication.” These forms of visual communication can include everything from architectural elements and sculptures to signage and printed maps. Communicating information to the user does not only have to be conveyed in written form. Most often, a more subtle approach is preferred, allowing the architecture to speak for itself, rather than covering it up with signage and causing more visual clutter. Signage and graphics can, however, be just as critical components to wayfinding in many environments. A well-designed floor plan does not always eliminate the need for textural signage. The key is incorporating wayfinding components into the architectural drawings from the initial planning stages. With a new building comes new challenges, and anticipating these challenges in the beginning stages of the design process can help eliminate problems down the road.

Academic research on creating environments that are both user-friendly for adults and children has often been left out of the mix. How do designers approach this complex problem and anticipate how both a child and an adult will navigate through a space? There is a significant difference in the way children and adults perceive space and relate to objects. “Children learn, socialize, and nurture their creativity through play.” Using a variety of scales within the architecture and the exhibits can create an active learning environment for children. Creating spaces that encourage play and discovery using multi-sensory exhibits will enhance the interactive learning behavior. Appealing to the sensory needs of children (sight, smell, touch,

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sound) can be achieved by using a variety of textures, colors, music, and lighting effects.\textsuperscript{6} Piaget’s ideas about play argue that play can be the vehicle through which children interact with their environment and construct their knowledge.\textsuperscript{7} Some of the top-ranked children’s museums in the United States (Boston Children’s Museum, Indianapolis Children’s Museum, Children’s Museum of Houston) have designed spaces that allow the child to explore and learn while the adult can either choose to participate, or relax and monitor their child from a safe distance. Seating is strategically placed to anticipate these particular instances.

Textual signage, out of all graphic elements, was the most effective in reducing wayfinding errors.\textsuperscript{8} Passini has identified three types of signs important to the wayfinding task: directional, identification and reassurance signs.\textsuperscript{9} These wayfinding supports should be consistent in their placement to help the user make and execute decisions that direct them to their destination. The presence of signage is not the only essential element of the wayfinding task; how it is displayed, where, the typography used, legibility and color scheme all play a major role in how the user locates and processes the information. Both Passini (1992) and Berger (2005) discuss placement of signage and its importance in environments that are becoming visually cluttered and overcrowded with graphics. It is imperative that signage include quality information that is both accessible and legible to all users. The Americans with Disabilities Act (1990) Accessibility Guidelines (ADAAG) give detailed signage standards that designers must comply with in all newly constructed buildings.\textsuperscript{10} ADAAG help ensure that users with physical disabilities are allowed the same experience within the built environment as users without

\textsuperscript{6} Ibid., 169.
\textsuperscript{8} Michael J. O’Neill, “Effects of Signage and Floor Plan Configuration on Wayfinding Accuracy,” \textit{Environmental and Behavior}, 23 (Sept. 1991): 571
physical impairments. While these guidelines help designers solve wayfinding solutions for the physically impaired, they do not necessarily aid in the design of effective wayfinding solutions for the rising illiterate population, the cultural diversity that exists in the United States, or solutions for designing signage for children.

One major component that is commonly overlooked in publications on wayfinding is the issue of "universal design." Universal design is a term often used by design professionals that refers to a design that is accessible to all users. Universal design is sympathetic to users with physical needs or handicaps. Physical disabilities have often been discussed and researched, but what is being overlooked is the cultural diversity that exists in the United States today; the language barrier that prevents immigrants from receiving the same experiences as English-speaking Americans. Not only is there concern for the 11 million non-English speaking population in America but also for those with learning and reading disabilities. The 2003 survey conducted by the U.S. Department of Education determined that 14 percent of American adults had Below Basic prose literacy.\(^{11}\) Below Basic literacy level includes a range of adults; non-literate adults and those adults with scores that fared below average; meaning most did not have the "skills necessary to perform simple, everyday literacy activities."\(^{12}\) These everyday activities may include reading and understanding documents, using a television guide, identifying a specific location on a map, or reading warning information on prescription labels. These individuals may process information differently than the majority of users commonly studied by researchers to determine effective wayfinding systems.

The Process

\(^{11}\) National Assessment of Adult Literacy, "A First Look at the Literacy of America's Adults in the 21\textsuperscript{st} Century." National Center for Education Statistics. 3 April 2006 <http://nces.ed.gov>

\(^{12}\) Ibid., Literacy Assessment
In order to fully grasp the totality of developing an entire new identity for the museum as well as a complete environmental graphic package, I felt it necessary to first gain experiential knowledge of similar environments. This step involved visiting current children’s museums and science centers throughout the United States (Indianapolis Children’s Museum, St. Louis Science Center, St. Louis Children’s Museum, Kohl Children’s Museum, and the Chicago Children’s Museum). Visiting the Indianapolis Children’s Museum, the world’s largest, was the starting point for my journey. With each museum I visited, there were positive and negative aspects to the environmental design. Both instances were equally beneficial to my development of graphics for the new THCM.

The next step was to meet with the architect, acquire a set of blueprints for the new museum’s floor plans and elevations and discuss his vision for both the site and the interior space. The final construction documents are not yet completed and interior materials and finishes are yet to be determined. This meant it was a perfect opportunity to jump on board. Half-way through the design work for my thesis, the site location changed and with that, the building plans went from new construction to the renovation of a downtown structure. This hindered my wayfinding approach, but luckily, the identity graphics that I developed were still on target for the new location. The renovation posed new wayfinding challenges with the incorporation of a multi-purpose building housing both the museum and a hotel.

Meetings with the volunteer staff and board members of the current museum helped me get a better understanding of goals and vision for the new building. What types of exhibits will be displayed? What types of printed materials are needed and the content necessary for these? What type of events will be held in the museum and the amount of staff available on the floor during operating hours? We also discussed the need for developing a new website design and marketing materials. During these discussions I learned what types of funding were available for
graphics and how their funds were acquired. The majority of guests to the museum are children visiting on school field trips. The target audience and the majority age group of the museum’s visitors were important in developing the graphics. One other major component was the type of exhibits that were being designed for the new museum. Since the museum’s revenue in admission fees strongly depends on school field trips, the museum must then incorporate Indiana teaching standards and curriculum into their exhibits. In order for local area schools to justify the visit, the exhibits must comply with what the children are being taught in the classroom. So the exhibits that are being designed for the new museum will be interactive learning experiences that will follow what the children are discussing in class.

Since my work on the museum’s graphics was purely conceptual for my thesis, discussions were held with THCM board members to discuss incorporating my designs into the new museum. Additional plans to meet with the exhibit designer, architects and interior designers are underway to see how my research and designs can help strengthen the current museum’s graphics. Although the ideal process would have been a collaboration among these individuals in the conceptual design stage, lack of funding and a sudden change in the build site mid-way through my designing, led to a more unorthodox approach.

Wayfinding

So, how does a designer process all of this information when developing wayfinding systems? In order to produce an interactive learning environment that allows all users the same experience, I proposed the use of electronic media when feasible. Interactive informational touch screens can help teach both the parent and the child about the exhibit and can also help increase literacy levels. By implementing these interactive touch screens, adults who do fall within the Below Basic literacy level, and are unable to assist their child in reading and
understanding facts about the exhibits, will feel more at ease and encouraged to explore and learn along-side their child. The touch screens can also provide those children that have yet to learn to read, the same experience as older-aged children and foster an environment that promotes active learning through play and experimentation.

For the museum, additional costs added into the construction budget for digital media would quickly be returned in savings they would accrue from reducing the printed materials needed in reproducing signage for each event or exhibit. The digital signage could be updated daily or easily changed to accommodate visiting exhibits. Video walls, which could be controlled and updated by computer, could serve as both a functional wayfinding tool and part of the interior design and décor, but to be effective, must be planned for accordingly in the beginning schematic design phase. This is where research collected during the programming stage becomes useful. Interviewing the client and other employees was helpful in understanding the key points to address. Flexibility and incorporating the latest technology is a priority for the new THCM and the changeable electronic signage meets the economic concern, with the museum operating from community donations and admission fees alone.

With graphics bombarding our environments, it is imperative that the look and feel of signage and other communication elements be anticipated within the context of the space to ensure minimal visual clutter and distraction. "Having our attention shifted away from the built environment as a language greatly impoverishes our ability to read our surroundings, to recognize messages encoded in spatial form and consequently, to orient and situate ourselves."13

Wayfinding systems should be created to help minimize this visual clutter and strengthen spatial orientation, but when wayfinding becomes an afterthought, the environment becomes even more complex for navigation.

For the THCM, I chose to keep the signage simple with written text accompanied by iconic symbols, where necessary, for easy legibility. The graphics and written text are simplified down to the basic needs for navigational purposes. The graphic or symbol associated which each location, such as the stairs, elevator or restrooms are all as universal in their design as possible to be easily recognizable to both children and adults. Each symbol and written word is also followed by a large arrow pointing in the direction of travel. Although it is suggested that English be used for the written language, changes may be made in the future to include both English and Spanish. The recognizable symbol and arrow can stand alone in directing users to the correct location regardless of reading skills or language barriers. These symbols are also reiterated on the printed floor maps that users can consult for quick navigational use. These wayfinding graphics are fun, yet simple enough to be recognized by an illiterate child or adult.

As a graphic designer, I must anticipate for the abundance of colors, textures and patterns in the exhibits and on the guests themselves. With the variety of children and adults that will visit the museum comes many additional visual elements that will compete for the viewer’s attention within the space. How will directional tools or elements such as graphic symbols and signage stand out in this visual kaleidoscope? Making the wall colors simple with little color and pattern can often be helpful. Exhibits, visitors’ clothing and signage will all add color and life to the space. The colorful signage and directional tools will stand out if set against a solid, light colored wall. The consistency of their placement, size and color will also help reduce the visual clutter and make them easily identifiable even during high traffic days.

Placement of signage is an important component of the legibility factor. Signage needs to be horizontally placed within the corridors for wayfinding of the family rest stop, restaurant and exhibit space. Also, signage needs to be placed at heights that can be read by both adults and children. The new facility anticipates to have high traffic counts and reading signage that is
located at eye level in such a large crowd of people can be almost impossible. Signage that needs to be read by many visitors at one time is placed above eye level. In the new THCM, to accommodate the child and the adult visitors, signage will be suspended from the ceiling where possible. All other information connected to the wall surface, will be placed above the average adult’s eye-level for ease of legibility. Mounted directional signage will face perpendicular to the anticipated route of travel.

It was also necessary to consider the touch factor and heavy wear and tear that should be anticipated within any children’s environment. The new museum encourages play and interaction, so the signage must be able to withstand such use. General information about exhibits and directional signage may often be applied directly to the wall using vinyl lettering. This will allow for a simple, clean look and also be an inexpensive way to change out signage when needed. Object information that will be located at a shorter distance off the floor will be in the touch range for both adults and children. These signs should be fabricated using a laminate surface atop the printed information or use heavy glass that is mounted above the printed text or graphics. Both surfaces will withstand the abuse well and allow for easy cleaning by museum staff.

Public vs. private space can often be a major challenge in museums, but within the context of the new THCM, the architecture seems to speak for itself. Located on the second floor are the private offices for museum staff. The corridor leading to the offices may incorporate lower levels of lighting or a floor material change to discourage children from playing in front of the office door and to identify that there are no exhibits past a certain point. Although it is not a restricted space, discouraging traffic flow past the office doors will help decrease the noise level for staff. Signage will be necessary on those doors to indicate their use for museum staff only, such as the loading entrance, staging areas, prep kitchen, and janitor’s
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closet. Keeping those doors closed is an immediate indicator that they are private spaces, but signage will also be placed in appropriate locations to notify guests that they are not to enter beyond that point.

Signage, including typography, iconic symbols, color identification systems, and comprehensive maps are all graphic wayfinding supports. These elements are imperative to the wayfinding task, especially in complex environments. Maps are the most basic representation of space and inform us of how spaces relate to one another. Importantly, they tell where to go and how to get there. Viewers should immediately be able to locate themselves on the map with an icon and text that says “you are here.” Although the new THCM is only two floors, printed and mounted or stationary maps of the building’s floor plan are an essential tool in helping new visitors locate the restrooms, temporary and permanent exhibits, the restaurant and the exit.

Though I have consulted research that focuses its attention on a more general wayfinding process, it must be noted that designing environmental graphics for a museum is an entirely different process than designing for transportation facilities and hospitals. In these environments, it is imperative that users quickly find their destination and wayfinding components must be large and read from long distances. Museum visitors can choose to either use the wayfinding elements to locate a particular exhibit or the retail shop, or to explore and discover what the museum has to offer on their own. After all, discovery and exploration are the main purpose or mission of the museum. Within the new THCM, “you are here” maps and directional signage will be visible to all, but will not overcrowd the space. Since the museum has limited square footage, stationary maps need to take up as minimal amount of space as possible. This means that if a user chooses to utilize the directional elements, they must approach the map closer to read the text and understand the layout. It is also important that the
signage not overpower the exhibits. Informational signage about exhibit objects will be read from a short distance and the text will reflect such use.

The Identity

The web can be a visitor’s first impression of what a new museum has to offer. The THCM’s website design is consistent with the visual identity of the museum and strongly encourages discovery and interaction. The website must convince individuals to visit the museum. Visual imagery that promotes both permanent and temporary exhibits must be intriguing to all audiences. The website may be the visitor’s first experience with the museum and it must be as carefully designed as the building layout. Content includes the building’s location with driving directions and street maps of the surrounding Terre Haute region. Operating hours, admission costs and parking information are easily accessible. Wayfinding begins with directing visitors to the site and this often can be accomplished through a well-designed and updated website. Including a building layout map on the website will also help visitors prepare for their experience and become familiar with the building’s floor plan before they step through the doors. Visually appealing images of the permanent and temporary exhibits can be the selling point in getting visitors to the site. These exhibits are also accompanied by online interactive discover games. This may be the child’s first exploration of science and technology that allows them to be in control of their experience and also sets the stage for the interactive learning experience they will participate in once they visit the exhibits in the new THCM building.

These same graphics and marketing tools were implemented into the identity materials to create a consistent look and feel. The fun, child-like, hand-drawn graphics on the website are included on the letterhead, business card, and envelopes used for correspondence. The color
scheme and graphics used in these pieces are also similar to the design of the printed brochures
and floor maps that the information center will hand out in the museum. To help further
establish the new identity for the THCM, the same images and graphics are used in
advertisement materials such as billboards, signage, print ads, and television commercials.
Promoting traveling exhibits and upcoming special events is also important in attracting
membership and repeat visitors. For this purpose, I propose that large-scale signage be displayed
interchangeably in the open front windows that face the street and main entrance. These large
graphics will attract the attention of downtown traffic and will serve as announcements to
upcoming events and exhibits.

The use of graphics in an interior space does not necessarily always need to be functional.
Along with the design of wayfinding elements and identity pieces, I also felt it important to
incorporate graphics into the interior design of the new THCM. Environmental graphics such as
projections, vinyl wall transfers, and painted images can help enhance the fun, playfulness of the
space. The design of the building, both interior and exterior, should reflect the purpose and
function of the museum. With this idea, a proposal of large-scale graphics should be included
within non-exhibit spaces; restrooms, hallways, atrium, and stairways. These spaces are often
left unnoticed by designers and this can lead to spaces that are unfriendly and uninviting. The
use of graphics on both the interior and exterior can help enhance the learning environment by
stimulating excitement, discovery and exploration. The same child-like, hand-drawn graphics
incorporated into the website design will compliment the interior of the museum nicely.

Oversized graphics such as animals, insects, vehicles, etc. are playful and allow for an
experience that is often left in a child’s imagination.

The successful combination of both architectural design and graphic elements in
wayfinding solutions should be a priority to both the designer and the client. The importance of
what constitutes successful wayfinding relies on further research of spatial problem solving of a
culturally diverse group of users and the child’s experience. “Wayfinding is an important aspect
of environmental quality.”14 When one feels comfortable within an environment, the outcome is
usually a positive experience. The environmental graphics, along with the development of a new
identity package for the THCM will serve to enhance both the functionality and the quality of the
visitor’s experience. Attracting new visitors and their support is the key to sustaining the
museums day-to-day operations and to the success of their growth. The development of
attractive, awe-inspiring graphics that highlight the creative, interactive learning environment
housed within, can help in this success and with future expansions.

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14 Passini, Wayfinding in Architecture, 159.
Bibliography


Software

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Adobe Illustrator CS 2.0
Adobe Photoshop CS
Adobe Photoshop CS 2.0
Macromedia Flash MX 2004
Macromedia Fireworks MX 2004