A thesis submitted to The University of the Arts in partial fulfillment of the requirements for the degree of Master of Fine Arts in Museum Exhibition Planning & Design.

Creating & Sharing Visitor Connections to Objects

Conceptualizing a visitor-object interface to network visitors and museums through personal and shared experiences with objects

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To my mother who made sacrifices,

my ever-growing family that has lent support,

& my mentors that have shared their knowledge...

thank you for always believing in me, and your tireless efforts that have made it possible for me to achieve this goal.

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Abstract

This project aims to investigate how design, and design thinking, can be used to build bridges to an under-served audience, visitors ages 18–30, that may not feel comfortable in the traditionally authoritarian museum setting, and due to their preference for autonomous learning experiences, might be missing the authentic experiences museums have to offer. The ultimate goal is to connect these visitors to unique museum objects by re-envisioning the available entry-points to the visual and interpretive information. The focus of the thesis will be on exploring the interface between visitors and objects including methods of mediation, interpretation, and modalities of presentation used in object-centered exhibitions, as well as both the inherent and learned capacity for visitors to make meaning from objects. The goal of the project will be to present alternative means for the target audience to have self-directed opportunities to access information in museums and to create their own learning experiences that do not depend entirely on the expert voice or interpreter.

To accomplish these goals I am to applying a cross-disciplinary approach. It will look at contemporary exhibition practices across museums separated by subject matter and borrow from design disciplines more closely related to commercial ventures which successfully engage the target audience for this project. The idea is to search for convergences to support the creation of a conceptual interface that will enable the personal creation of meaningful museum experiences for the target audience.

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Thesis Problem & Goals

How can design create opportunities for an under-served audience, visitors ages 18-30, to develop methods of learning from objects, as well as provide a means of accessing interpretive and contextual information in object-centered exhibitions in many types of institutions? How can access to objects be designed to be intuitive, engaging, and relevant to this audience, given their preferences for gathering and organizing information to make meaning?

note:
The ideas of meaning making and organizing or re-ordering information to make memory is derived from informal education theories and Constructivist pedagogies.

See the Audience Profile > "Front-End Survey" and "Impact of the Internet" for information and sources about the audiences' preferences.

Goals
Explore exhibit design's potential to create new ways for visitors to access and organize information in a museum setting.

Investigate how people, specifically ages 18–30, learn from objects, and examine the possible role of design to support learning experiences for this target audience based on findings.

Promote transparency of interpretation, exhibition concepts, and object taxonomies, as well as of museums themselves as politicized institutions, in order to demystify the nature of the museum's knowledge and authority.

Advocate inclusive and collaborative methods of exhibition development and design that from their inception work to establish unity amongst the multiplicity of voices and vehicles that communicate to the visitors.

Impact Statement

Need / Relevance
This project is explores the potential of design to reach an under-served audience of visitors, ages 18-30, who might be disinterested in the museum as a place for object-driven experiences, intimidated by the perceived formality and authority of museums, or frustrated with the limitations of current interpretation methods. The target audience, which would prefer to have independent museum experiences (see front-end survey conclusions), might feel the museum is insensitive to their level of prior knowledge and observation skills. As self-directed visitors they may find relatively few entry-points through which they can expand their understanding of new ideas found in less familiar museum objects and interpretation, and may be likely to engage with ideas rarely addressed through traditional interpretation.

This project addresses the impact that digital technology and highly-mediated interpretive environments have had on how museum audiences gather and structure information. This audience has been empowered by the democratization of information on the internet, and feels confident accessing information, including answers to specific problems, through various technological portals. How can the museum inspire the same confidence in this group of visitors? What could make the museum a hip and empowering place? I will look for opportunities to inform accessibility via the intuitive approaches used in information and service design. I will explore the increasing need for museums/exhibitions to evolve in order to remain relevant in an age where knowledge is constantly changing and disseminated in real-time.

Additionally, the project celebrates the simultaneous, yet contrary, ephemerality and tangibility of objects, creation processes, and sensory experiences unique to fleeting exhibits in (hopefully) permanent museums. Objects change over time physically, as do the both perceptions of their collectors and viewers. There is a need to transform perceptions of the museum experience from static to dynamic.

There is a current trend of experimentation with museum architecture and site as a container for objects and catalyst for spectacle appeal to attract diverse visitorship. After the spectacle factor of unique and cutting-edge architectural commissions diminishes, because everyone has flocked to see them once and they are becoming synonymous with museums rather than distinctive, museums will need to refocus the experimentation likely towards exhibitions, in order to sustain visitorship. How can exhibits become more exciting and appealing experiences, and therefore more accessible?

The Institute of Contemporary Art/ Boston (ICA)
by Diller Scofidio + Renfro Architects
Photo: © Iwan Baan

Impact on the Audience
This project seeks to provide a means for disinterested and/or novice visitors to enter exhibitions prepared to pursue their own agenda for learning. Portions of this demographic (ages 18–30) may no longer be students with opportunities to visit with school groups, and many are not yet with children of museum-going age. However, it seems like they would be at a critical point during the development of preferences for methods of informal, self-directed, and lifelong learning. Consequently, it seems like an important audience to consider and to whom to reach out.

This project will investigate an alternative to more formal learning experiences, such as guided tours/programs/classes that are currently providing important points of entry and relevant links for the audience to make meaning from objects. The goal is to give the audience a tool box, and empower them to develop their own system of object analysis/interpretation. By making available non-threatening, versatile, and dynamic methods or environments, these visitors will learn from what they are seeing, while exploring what the museum has to offer, and making use of it how they see fit.

Essentially, this project proposes to find new tools for how to use a museum, i.e., learn from objects. The project will promote the development of observation skills for learning from objects in museums, as well as "visual literacy." Both skills are important in life beyond the museum. One would not expect a person without prior training to go to the library and magically find the information they need—although they may find all sorts of things that interest them. To find a particular something they must first learn how the information is structured or categorized, then learn how it is systematically ordered, and finally methods for accessing it. Likewise, it is a huge assumption to expect people to walk into a gallery and understand the carefully crafted messages of artists and curators if they don't know how the experience is organized or how to read objects (a means of access). Gallery labels are often unsuccessful in motivating active looking, allowing for the construction of personal meaning, and providing tools for viewing other objects (because labels are too specific or limited). However, it is likely that a visitor will find something of interest. How can the museum turn that "something" into an entry-point for larger exploration and a locus for greater understanding?

Impact Statement *(continued)*

Implications for the Field
This project pushes the boundaries of current modes of exhibition design, specifically as it is in service to the objects. Exhibitions generally showcase the institutional point of view, and serve to communicate very specific messages about a collection of objects. I hope to develop theories and craft concepts that might inform how contextual design for objects can create tools for the visitors to shape their experiences in museums through their own point of view that they find more appealing, meaningful, and memorable.

This project places design in its ultimate role as problem-solver by encouraging exploration of the medium's capacity to balance the sometimes seemingly opposing agendas of the museum, such as the presentation of objects in a white cube space that is a relatively neutral context versus an interpretive or immersive gallery space which intentionally contextualizes objects, the preservation of the authoritarian curatorial discourse versus more inclusive interpretation models, and the creation of an educational opposed to an entertaining experience. Of course, finding balance in the field lies in perceiving that these pairs exist as continuums rather than in binary opposition.

The nature of this project supports the cultivation of an audience that will hopefully find the museum's relevancy to contemporary societies and individual communities. By orienting the audience to a framework that supports understanding of how to access the information and experiences for which they are looking, the museum can replace the audience's preconceptions of the institution as authoritarian fortress with one of diversely accessible *wunderkammer.*

Not all objects interpret themselves.

This is not a pipe. Renee Magritte 1968

> **Jerry Thompson & Susan Vogel**
>
> Museums generally assume that the audience knows how to look, and proceed directly to an explanation of the work, it seems worthwhile to suspend the explanations for a moment, and to take a close look at looking.

Thesis Statement

Issues of accessibility are at the forefront of museum politics. How can design, and design thinking support the effort to make museums more inclusive? Museum sites are being revolutionized, and buildings conceived of as spectacle experiences by architectural superstars. The spark of interest in the museums as sustainable containers and viable additions to urban renewal projects has been fueled by environmentally conscious designers. But, what about on the micro, or more intimate level? Inability to access interpretation or contextual information in exhibits would be frustrating for any visitor regardless of how spectacular the building is that contains them. What can design do to make exhibits, traditionally the heart of the museum experience, more accessible to visitors and therefore both more appealing and meaningful?

In a commercial world where products, services, and entertainment experiences are becoming increasingly customized/personalized, how can museums remain relevant and competitive? How can they attract and consider audiences that may be more comfortable navigating and obtaining information in commercial realms which empower the individual customer? How can museum institutions be best positioned in contemporary society? As an information service, or maybe an entertainment experience? It is quite difficult to be a place simultaneously of learning and leisure. How can design overcome such boundaries and demonstrate to its audiences everything the museum has to offer, and how to access/use it?

This project seeks to create an orienting experience that would prevent uncomfortable or unmeaningful encounters with museum objects/collections. The focus is placed on objects because they are the unique assets of most museum experiences. People come to see and experience the real things in a world of replicas and virtual realms. The project aims to bridge the gap between a under-served and/or disinterested audience and object-centered exhibitions by providing tools for understanding the structure, methods of accessing information, and finally making meaning. I believe that this might be achieved by sharing strategies for observation/analysis, revealing contextual frameworks that might otherwise be assumed to be constructing order, and empowering visitors to customize their own experiences.

Currently object-centered exhibitions most often attempt to provide entry-points for audiences via text panels. While there is certainly something to be said for unmediated experiences, like the visceral reactions people have before masterpieces, in most cases visitors (especially novices) need additional information to find wonder and meaning in certain objects or experiences. Rarely are object-centered exhibits used effectively to equip visitors to construct their own interpretations, or actively observe for themselves. Skills needed for novice visitors to become self-sufficient and confident are most often taught by education staff through programming. However, without these more formal programs where do we leave visitors who would prefer to experience the museum on their own? It is important to note that this project is not seeking to replace existing models of interpretation in exhibits or programming. Rather, the intention is to create an overlay that provides both an alternative to and connection with existing practices, as well as preserve the instrinsic authority of museums interpretation while increasing transparency by adding additional voices and perspectives.

How can design orient or provide a new framework for museum experiences with objects? Can it be open-ended enough to suit individuals who are potentially each looking for different experiences? Can design provide a transparent structure that allows novice visitors a more intuitive access to the information that objects and museum interpretation have to offer, yet not be off-putting to *expert* visitors? Might it be possible to present a novice audience with tools for viewing exhibits through multiple lenses, or rather simply make them conscious of their capacities for multiple kinds of sight? Surely visitors know they can see for themselves, but how can testing ideas of seeing and experimenting with how to see make object-centered exhibits more physically interactive? Seeing and perception can be discussed in terms of physical processes and learned/culturally constructed practices.[1] As such, definitions of seeing and perception have changed with our understanding of biology and technology, and as the result of cultural shifts (the long zoom).[2] Each has had implications on interpretive methods and strategies used by curators to view/analyze objects, which in turn affect the audience's ability to access information from objects in museums.

1. Laura Sewall, *Sight and Sensibility: The Ecopsychology of Perception* (New York: Reed Business Information: 1999): Chapter 1.

2. Steven Johnson, "The Long Zoom," *NYTimes.com*. 8 Oct 2006. The New York Times. 10 Jan 2008. < http://www.nytimes.com/2006/10/08/magazine/08games.html>.

Methodology

A cross-disciplinary approach to my thesis research will be used to inform concepts of how visitors might access exhibitions on their own terms—taking in consideration their diverse backgrounds and previous experiences. This project attempts to build bridges across traditionally disparate agendas of various exhibition stakeholders, as well as institutional approaches showing how collections from different categories of museums, i.e. art, anthropology, and history, overlap and can interact. For instance, design can demonstrate how different disciplines (and cultures) look at the same objects differently, thereby illustrating the potential for multiple types of sight. I will be emphasizing the potential of design as a problem-solving tool, system for information delivery, and structure for creating memorable experiences. Each aspect will be important to the audience's perception of possible solutions as being seamlessly (intuitive) or disruptively (not necessarily a negative for this audience, for instance create tasks which engage visitors in active participation) integrated into the fabric of the museum experience.

In order to support a meaningful museum experience for the audience, the project will experiment with methods for creating entry points to the museums' offerings, i.e. objects/content, hermeneutics, and environments. The entry-points might be designed much in the same way that the service design industry considers the touchpoints of its offerings/brand. I believe it will be imperative to consider the influence of commercial and virtual realms on this audience's preferences and methods for gathering and making meaning from information. Here, the library will become a useful case study, as it is an institution very similar to museums that has rather successfully embraced the commercial realm and its technology.

The user-friendliness of the project, which will value visitor autonomy and agency, can be informed by approaches used currently in the effort to link under-served audiences to objects and interpretation in museums. However, this link often occurs within educational programming and guided experiences, which are often unavailable or unattractive to an audience seeking a more leisurely learning experience. Nevertheless, as practitioners of informal education, museum educators are effectively employing methods of constructivism and personal inquiry to encourage individual access to learning opportunities in museums.[3] Both educational models, in addition to other interpretive methods, could potentially inform the design of touchpoints.

The touchpoints will serve to orient visitors to methods used to learn from objects and to create a structure for, and a means to access information, allowing them to build a meaningful experience for themselves during their visit. For instance, the project could create a personal tour based on interests and levels of knowledge input by users as prompted by questions, and/or from data gathered from tracking users capturing what they explore, and how they preferred to navigate the museum. It will explore seeing as a physical process, as well as a learned or culturally constructed action. Additionally, it would speak to the different types of perception that occur when seeing versus reading. Parallax, or the distance between our eyes that allows our perception of space/depth, has become a visual metaphor for the multi-sightedness that can be explored by museum visitors. The viewers' discovery of their inherit multi-sightedness can serve to create a continuum between otherwise binary and separate types of interpretation or experiences.

The Cross-disciplinary Approach

There may be nothing new under the sun; however, there are infinite new ways to combine existing ideas. Individual disciplines, which have ever-shifting meaning and malleable boundaries, are increasingly hard to define and less applicable in a "post-modern society that values the relationship between ideas over the purity of the individual or original idea." The idea of cross-disciplinarity stresses the interesting outcomes that happen as a result of "borrowing" ideas, processes, or means from one discipline and creatively applying it to another which is likely tangential or related on the surface. It is not about the fusion of multiple disciplines, but rather useful intersections.[4]

Influence of the Commercial Realm: Service and Experience Design

Service design is the strategic planning of objects and processes between a user and a service/brand. It includes the design of tangible and intangible aspects of the service including language and communication methods, behaviors related to the use of a product or service, environments, and objects. Service design networks products, such as information, to different individuals in customized combinations in response to increasingly complex market segmentation.[5] It often makes tangible otherwise experiential, intangible or abstract services like the exchange of information and knowledge. Experiences themselves have become popular commodities, and products are designed with careful consideration of the user-experience. An entire economic paradigm, the Experience Economy, has been constructed on the idea that businesses offer "guided transformation" to their consumers through products and services.[6]

3. George E. Hein, and Mary Alexander, *Museums: Places of Learning* (Washington, DC: American Association of Museums, 1998): 29–45.

4. Mark Breitenberg. "Cross-Disciplinary Curriculum Model for Design Education," *Echo: Hear Say.* Jamer Hall, et al, eds. (Philadelphia, PA: University of the Arts, 2008): 70–73.

5. "Service Design & Why It Matters to Business," An interview with Simona Maschi and Vinay Venkatraman. 20 Aug 2006. Danish Design Center. 9 Oct 2007 <http://www.ddc.dk/DESIGNVIDEN/artikler/simona_maschi_service_design/>.

6. B. J. Pine and J. H. Gillmore The Experience Economy: Work is Theatre and Every Business a Stage. (Boston, MA: Harvard Business School Press, 1999): xi.

Information gathered about the target audience, visitors age 18 – 30, to inform the design and development of the project concept.

Audience Profile

User Model 1
Jeneé
Age 28
Lifestyle columnist for urban newspaper, recently wrote a column about her obsession with "Googling" things
Annual income $42,000
Graduated from a State University with a B.A. in English and Journalism
Lives in a townhouse with her faithful canine
Largest use of disposable income: clothing/shoes
Others: dining out, technology for the home/office, expanding her movie collection, doggie day care
Favorite use of free time: Dancing with girlfriends
Owns a MacBook
Has a gym membership
Updates her MySpace, Facebook, and blog daily
Listens to jazz, oldies, r&b, and hiphop
Favorite museum experience: National Museum of American History, D.C.

User Model 2
Ty
Age 18
Full-time Starbucks employee
Annual income $28,500
Part-time student at local junior college, doesn't know what he wants to do for the rest of his life.
Lives in an apartment with his girlfriend and 2 roommates
Largest use of disposable income: music equipment
Others: movies and other dates, take-out food, concert tickets, clothing/shoes
Favorite use of free time: rehearsing / playing with his band
Owns 2 iPods
Has a Netflix membership
Has a MySpace page, but is usually too busy updating the band's page and Flickr photo album to check it
Streams his band's music, and shares it for free on popular web sites
Favorite museum experience: Seattle's Experience Music Project

Front-End Survey

I administered the front-end during the month of January as a web survey using www.SurveyMonkey.com. I invited 45 people to participate, of which 34 completed the survey. They were primarily, but not entirely, from within my target demographic (ages 18–30). Of the completed surveys, 91.2% of the respondents were in the target audience.

The survey consisted of a mixture of closed and open-ended questions/comments. Ten questions related to the subject matter, and six questions collected demographic information. The survey was intended to get a broad idea of visitor behaviors and preferences relating to how they access or collect information. I also asked about their motivations for visiting, and about their expectations for learning at museums. The first page of the survey related to the visitors' pre-visit experience. It inquired about whether they went to the museum's web site, and also collected other information I hoped to comb for their motivations for visiting museums. The second page focused on initial preferential/behavioral decisions the respondents make upon arriving at the museum. Do they pick up a map or join a tour group? It also asked about whether they visit museums with the expectation to learn or not. The third page intended to glean information about how the respondents prefer to access information in museums. There was particular attention given to learning about the respondents' interest in interactive exhibit components because of the high probability that my thesis project would include such technology. The final page of the survey served to collect demographic information in order to categorize respondents and their answers.

"I prefer to come to my own opinions about my experience."

Conclusions

What I have learned from the survey is somewhat expected based on the questions I had asked, but there was also an unexpected revelation that may be more profound in terms of its relevance to for my project. Without speaking to anyone in person or even picking up a phone, I was able to recruit 35 people to fill out this survey. Some of my peers used exactly the same tactics. How did we do it? Primarily by inviting people to participate through links or messages on what are called "social media" or "networking" sites. We created groups on Facebook, posted the link on MySpace sites, sent Instant Messages (IM) to people on our "buddy lists." While I was struck by how much my target audience relies on Google to gather information, I had totally underestimated their use of social media. They are amongst the most popular sites on the internet, and continue to pop up in new varieties at a fascinating rate. Social media sites not only allow people to gather information, but also to share it in real-time. It was this realization that influenced my research and led me to think about some unexpected ideas for my project.

As for what I learned from the data, there was also a combination of what I had expected to find as well as a few pleasant surprises. For instance, I did not expect to find that nearly 90% of the respondents typically go to the museum's web site before their visit. I expected the number to be somewhere around 50%. Perhaps this number may have been influenced by the fact that the survey was administered online. My initial reaction was that many museums might need to polish their web image a bit; they might be losing this audience before they set foot inside. Museum web sites are steadily improving in quality, perhaps because they are learning how many people draw their first impressions from the sites. When asked what they were looking for, respondents answered with the expected list of logistical information: what is on view, hours of operation, admission price, directions, etc., which might be read as this audience's list of factors used to decide whether they will visit or not. Is there something there that interests me? Is it open at a convenient time? Can I afford it? Interestingly, the most common answer *current exhibits/what is on view* given by nearly three quarters of the respondents correlated with the answer most often given for the question *What is more likely to interest you in visiting a museum?* where 82.9% of the respondents answered *a particular show or exhibit.* This establishes that the target audience is indeed going to the museum web site to determine whether they are interesting in visiting. This information gives me confidence that I can further concepts/solutions for the thesis project that can either be positioned as an exhibit or employ some type of pre-visit web site component.

The second part of the survey confirmed some suspicions I had about this audience's behavior and expectations for their museum visit. I learned that this audience usually chooses to orient itself once at the museum in one of two ways. They either *wander until they find something of interest* (56%) or they *use a map or guide* (47%). These methods of orientation, or lack thereof, seem consistent with this group's preference for experiencing museums on their own. An overwhelming 91.2% of respondents claimed that they would rather *experience on their own* than *attend programming led by an educator (lecture, tour, class)*. I was happy to see this majority because my belief that this audience preferred this sort of autonomous experience was an inspiration for the project. I was interested in how museums could reach this "do-it-yourself" audience without impeding their agency. When asked to explain why going it alone was their preference, the respondents' answers also explained why they used the two seemingly opposite orienting behaviors above. About a third of the respondents explained that the reason they like to experience museums on their own is that they *like to let their pace/flow be determined by their personal interests* which correlated to the *wandering*. The second most popular response for wanting an autonomous visit was that *I prefer to come to my own opinions about my experience*. These people generally cited that they look for a specific experience, which would account for the use of a map/guide to navigate through the museum as planned. I think that this information is most helpful as a reminder to make sure that my project doesn't promote a linear or fixed experience. Any solutions need to allow for a wandering and intuitive approach.

I also learned that almost 80% of this audience goes to the museum with the expectation that they will learn something. I did not have a real preconception about what the answers to this question would reveal. I thought that it might be equally likely that this audience views museums as a place to go purely for entertainment and leisure, and therefore they would not expect to learn anything. I am encouraged by the data that suggests otherwise and feel it gives great meaning to my project, as well as greater potential impact for its conclusions. The responses collected from the related question *What types of things do you hope to learn/remember?* were not particularly useful. The examples I gave were most often those cited, so I feel I undoubtedly skewed the data. However, two very interesting and unique comments occurred multiple times. In four answers, there was mention that respondents hoped to gain *a sense of human progress, and changing thoughts*. In three different answers, people mentioned that they hoped to learn *things that you can only learn in the presence of real objects*.

I also attempted to learn about this audience's preferences for gathering/accessing information at museums. When asked, *Do you like to use multimedia or physically interactive exhibit components?* 80% of the respondents said yes. I also asked them in an open-ended question to share their opinions and experiences with interactives, which were varied in their praise and criticisms. The most popular comment was, in fact, negative: five people said, *they are not rewarding enough*, which was defined as they *don't add extra information.* Secondly, four people observed *I like them when they are well designed*, which was defined as *simple to use or intuitive.* None of the answers was particularly surprising. This group still listed *object/text labels* and *maps/diagrams* as the most helpful formats of museum interpretation. I wonder if this is because they are the most common formats, since quite a bit of research suggests that labels are often not effective. *Visitor Feedback/ opinions* were least often seen as being helpful. This intrigues me, given my previous revelation about the use of social media and the growing popularity of user-generated content sites like YouTube. Perhaps this is something that I can address. How is it that museums can incite a dialogue amongst visitors that prefer to have solo experience? Can visitors learn from one another?

"...things that you can only learn in the presence of real objects."

Review of Market Research

As public funding declines and becomes more competitive, museums have begun to rely on visitor generated income and donations, as well as other sponsorship. Like most cultural institutions, museums primarily rely on an older adult audience base for support. In order to ensure that the next generation will feel compelled to share their support, it seems logical to begin engaging younger audiences in ways that will help to see how the museum benefits them and their community. To engage the audience, you must first get them to the museum, and secondly enable them to create a positive experience.

In a recent survey, it was learned that 28% of college students said that they were "very interested" in visiting museums, however they were only willing to pay between $5 and $10 for tickets.[1] From a marketing perspective, this is a sub-group within the target audience that is ripe for development. It is hard to project what percentage of the larger target audience might be interested in visiting museums, except that the non-student audiences might be less interested in visiting, and that young professionals might be more interested in visiting. Interestingly, data collected between 2004 and 2007 by the Greater Philadelphia Tourism Marketing Corporation shows that the most popular activity reported by visitors between 18 and 35 was going to the Independence Visitor Center,[2] which serves as a hub of information for the museums and sites in Philadelphia Metro Area. This shows that visitors in the target audience, rather than just going to the museums and sites or hopping on a tour, consciously went to gather information to customize their own paths and experiences. (How might this idea of the information hub, which aids visitors in customizing their experiences and points to other institutions, inform the project)?

All types of cultural organizations are recognizing that there are multiple audiences, which come with different levels of knowledge, and expectations for their experiences. The answer for many organizations has been to follow trends from the for-profit sector, and design customizable services and experiences to attract new audiences. The Philadelphia Orchestra, for instance, has developed several types of performances that allow patrons to choose from different levels of interpretation, from the traditional concert, to concerts with spoken commentary, to multi-sensory performances with visual projections, commentary, and post-concert events.[3] How can museums continue their movement towards creating visitor-centric experiences?

Word of Mouth and Museums

At a conference about museum marketing organized by Heritage365 in October 2007, Bitmove, a company that specializes in branded experience design and marketing gave a presentation about the impact of involving visitors in marketing. Word of mouth has long been important to the promotion of museum exhibitions. The "consumer messenger" is considered to be more credible than advertising.[4] However, the impact of word of mouth has exploded exponentially, and taken on a life of its own as viral internet marketing, due to the combination of a highly networked population (particularly the target audience) and accessibility of tools to create user-generated content.

Bitmove creates interfaces that allow visitors to create content, like short videos, which engage visitors in active and creative tasks during their museum experiences, and create a "keepsake" that acts as a "you are here mark on a map."[5] Visitors, often after completing a survey, are able to e-mail their creations to themselves and friends generating e-mail databases linked to survey data. When the e-mail is sent, it includes a link to the museum's web site and other promotional content. In the case of The Heineken Experience in Amsterdam, which has a very similar target audience, after approximately three years of visitors e-mailing their user-generated content, approximately 15% of visitors said they learned about the exhibit from another visitor's e-mail.[6]

How could the project integrate market research into the experience developed for the under-served target audience in order to learn how to serve them better? Can user-generated content be used to increase word of mouth promotion?

1. Ximena Varela, "Research-Based Audience Development: Developing the College Student Audience," *Philaculture.org*. 2007. Greater Philadelphia Cultural Alliance. 18 Mar 2008. <http://www.philaculture.org/campaign/initiatives.htm#Breakfast>.

2. Greater Philadelphia Tourism Marketing Corporation, *GPTMC Visitor Surveys: Summer 2004– Winter 2007.* (Philadelphia: GPTMC, 2008).

3. Peter Dobrin. "Orchestra Takes New Approach with Packaging," *Philly.com*. 17 Feb 2008. Philadelphia Inquirer. 15 Mar 2008. <http://www.philly.com/philly/entertainment/15664682.html>.

4. Klaas van der Veur, "Chromakey MovieMail: the Power to Impact Visitor Involvement," (audio file) *Conference in a Box.* Oct 2007. Heritage365. 4 Mar 2008. <http://www.heritage365.com/conferences/marketing-conference-in-a-box.asp?29175517>.

5. van der Veur: audio file.

6. van der Veur: audio file.

Review of Visitor Research

The Victoria & Albert Museum, which has been at the forefront of experimentation with object-centered exhibitions and technology within them, has defined an audience profile that overlaps the target audience. Independent Learners is a phrase borrowed from *Understanding and Facilitating Adult Learning*, by S. Brookfield, and developed through the museum's visitor research and exhibit evaluation. While it applies to adult visitors (18 or older) in general, the profile really resonated with how the survey respondents in the target audience described their preferences for museum experiences, as well jived with other research that was applied throughout this project. Independent Learners are simply defined as adult visitors who have self-motivated reasons for visiting (they are not a part of a tour/class group), and often come alone, but may come in a small, personal group.[7]

Primarily characterized by their learning style, Independent Learners:[8]

1. prefer to manage their own learning. They are not driven by traditional disciplinary learning or restricted by conventional subject boundaries like collection categories.
2. are motivated by internal incentives and curiosity rooted in personal experience and interests.
3. are problem-centered.
4. see themselves as part of a larger learning community that incorporates word of mouth and networks.

In order to meet the needs of the Independent Learners, the V & A recommends, when developing exhibits for this audience, to keep in mind that their interests cannot be predicted, and therefore creating flexible means to access interpretation is imperative. The V & A also acknowledges that "there is a conflict between the needs of the Independent Learner and normal museum practice. The latter is expert-directed; that is, it creates dependence on the expert, takes no account of differences in prior knowledge and experience, and takes no account of interest that is for practical purpose."[9]

The V & A advises that experiences for Independent Learners include:[10]

1. connections with ideas and information elsewhere inside and outside the museum.
2. opportunities to take on the role of expert within the gallery (promote ownership of ideas) and make the voice/actions of the expert more transparent.
3. a means for visitors to exchange information
4. study areas.

7. Gail Durbin, "Connecting with the Visitor at the Victoria and Albert Museum, *"Old Collections New Audiences: Decorative Arts & Visitor Experience for the 21st Century.* Donna R. Braden and Gretchen W. Overhisher. Eds. (Ann Arbor, MI: Henry Ford Museum & Greenfield Village, 2000): 40.

8. Durbin: 40.

9. Durbin: 40.

10. Durbin: 40.

Impact of the Internet On Audience Expectations

The proliferation of information on the internet has indeed made most kinds of information less elitist and more accessible. At the same time, it has made information that cannot be accessed through the internet (which is of growing scarcity) more intriguing. This type of irreproducible information is almost entirely limited to experiences that must be had first hand in a particular context, or at a particular moment. The resulting boom of experiential products and services has been created to fulfill the demand for unique and authentic opportunities by audiences whose experiences are often mediated by the internet or other virtual media.

The proliferation of information on the internet, however, is not considered an evil. It is championed for democratizing access to many types of information and experiences and the exchange of ideas across the globe. "Widespread adoption of the internet in the past decade has had some dramatic impacts on people's communication patterns and the way they seek information."[11] Increasingly, it is a platform for sharing information created by the users themselves.

The target audience is the most likely population to use the internet; 87% of 18–29 year olds said they used the internet when surveyed in 2007. 71% of the total U.S. population uses the internet, and of them, 69% say that they use it daily.[12] The most popular internet activities include reading/writing e-mail (communicating), done by 91% of users, and using search engines (seeking information), done by 90% of users. Interestingly, 77% of users say they look for information on hobbies or personal interests.[13]

The internet has created a Google obsessed audience that is constantly searching for information, creating an expectation for information on demand: what they want, when they want, how they want it. The internet provides this service by allowing visitors to search its vast contents indexically, based on keywords or tags. While what the user finds when he or she searches is, or at least can be controlled, or manipulated by many forces. A search almost always provides the opportunity for the visitor to experience information parallax, or multiple views of the same information simultaneously that can be combined to create a broader or deeper understanding of the information before them.

Simply surfing the internet, and in particularly seeking information by searching indexically, have influenced the understanding and appreciation of nonlinear and non-hierarchical narratives and thinking processes. Linear and hierarchically based transmission-based education methods now seem nearly counter-intuitive to a population whose primary method of gathering information is jumping in wherever it is accessible to them and proceeding to choose their own paths through what they find, organizing and reorganizing the information as they see fit, and in many cases adding information where they find it to be deficient. A modification in the use of the role of internet from a place where a majority of users merely seek information to the idea that users participate in the creation and organization of information has been called Web 2.0.[15] This might be compared to the museum's movement towards a visitor-centric experience.

The explosion of user-generated content has advanced the growth of do-it-yourself attitudes, and even the creation of a DIY culture. Opportunities to create content have led to an expectation for free storage and hosting so people can share their content personally or publicly, as well as changing ideas about the ownership of content. Lawrence Lessig, a scholar of intellectual property, suggests that the internet has enabled a shift in the paradigm of culture, from "Read Only," a top-down organization where the culture was owned by a few and consumed by the masses, to a "Read/Write culture," where culture is created and recreated by the masses and owned collectively, or rather considered as a part of the free public domain.[16]

> The same free flow that makes information cheap and reproducible helps us treasure the sight of information that is not.[14]
>
> **James Gleick**

11. Lee Rainie and John Horrigan, "A decade of adoption: How the internet has woven itself into American life," *PewInternet.org.* 25 Jan 2005. Pew Internet and American Life Project. 10 Mar 2008. <http://www.pewinternet.org/PPF/r/148/report_display.asp>.

12. Pew Internet & American Life Project, February 15—March 7, 2007 Tracking Survey. *PewInternet.org.* 10 Mar 2008. <http://www.pewinternet.org/trends/User_Demo_6.15.07.htm>.

13. Pew Internet & American Life Project, March 2000–September 2005 Tracking Survey. *Infoplease.com.* 10 Mar 2008. <http://www.infoplease.com/ipa/A0921862.html>.

14. James Gleick, "Keeping It Real," The *New York Times.* 6 Jan 2008. 26 Mar 2008. <http://www.nytimes.com/2008/01/06/magazine/06wwlnledet.html?_r=1&scp=1&sq=keeping+it+real&st=nyt&oref=slogin>.

15. Mary Madden and Susannah Fox, "Riding the Waves of 'Web 2.0,'" *PewInternet.org.* 5 Oct 2006. Pew Internet and American Life Project. 10 Mar 2008. <http://www.pewinternet.org/PPF/r/189/report_display.asp>.

16. Lawrence Lessig, "How Creativity is Being Strangled by the Law," *TED.com*, Mar 2007. 18 Nov 2007. <http://www.ted.com/talks/view/id/187>.

45% of 18–29 year olds have created content. They are second to the 47% of 30–45 year olds who generate content. (It is good to know that the project will appeal to older audiences that are more likely to visit museums). "Power Creators," the most eager group of content generators as defined by the Pew Internet Study are, on average age 25, likely to be students and reflect the general population in terms of race and ethnicity. They are most likely to have posted original audio or image files to web sites, and 12% of power creators have their own blogs.[17]

The most popular form of user-generated content and Web 2.0 participation is the creation of "tags," or labels for internet content. The tags generated help to expand or narrow the language surrounding content, and organize it multiple ways. Tagging is also a social activity. It not only brings people and information together, but also connects people to with other like-minded people who create or apply a shared or vernacular language to label and organize content.

In 2004, 26% (approximately 33 million) of American internet users had "reviewed or rated someone or something as part of an online rating system."[18] 28% of Americans who use the internet have tagged content, 7% say they tag daily. 32% of 18–29 year old internet users say they have tagged content, and the majority of taggers are under age 40. Interestingly, people who are in the demographic minority of internet users, are low income or have minimal education, are most likely to tag.[19] This is perhaps because they are not likely to look for information using terminology related to academic disciplines. Communication activities online, collectively referred to as social media, have also intensified. The use of massive online communities like MySpace, Facebook, Friendster, and Twitter are very popular among the target audience. 54% of college students, ages 18-30, visit a social network at least once in a typical day. 27% of the students surveyed said they prefer to communicate using social networking site over face-to-face communication (at 11 %), or over phone (23 % prefer to call or text message).[20] While some predict the big social media networking sites may be on their way out, more personal or customized forms of social media, like blogging, and more sophisticated social communities continue to grow, for instance ABC's Quaterlife. In addition, the use of sites like Flickr and YouTube add a social layer to the creation and sharing of user-generated content.

Museums can support visitor access to information through a personal discovery system, the structure or design of which could be likened to how one seeks for information on the web. One "Googles" something and proceeds to navigate links narrowing or expanding their search, exploring tangential points of interest, and finally assembling the information they gained throughout the search to create meaning. A self-guided or created method of information access would encourage familiar and intuitive uses of an institution that may seem foreign. This type of system will encourage visitors to construct personally relevant juxtapositions of works, creating a useful personal context. Putting visitors in control of finding just the information they want can help to overcome the issue of information overload in exhibits that hope to engage everybody in something.

17. Amanda Lenhart, Deborah Fallows, and John Horrigan, "Content Creation Online," *PewInternet.org*. 29 Feb 2004. Pew Internet and American Life Project. 10 Mar 2008. <http://www.pewinternet.org/PPF/r/113/report_display.asp>.

18. Lee Rainie and Paul Hitlin, "Use of Online Rating Systems," *PewInternet.org*. 10 Oct 2004. Pew Internet and American Life Project. 10 Mar 2008. <http://www.pewinternet.org/PPF/r/140/report_display.asp>.

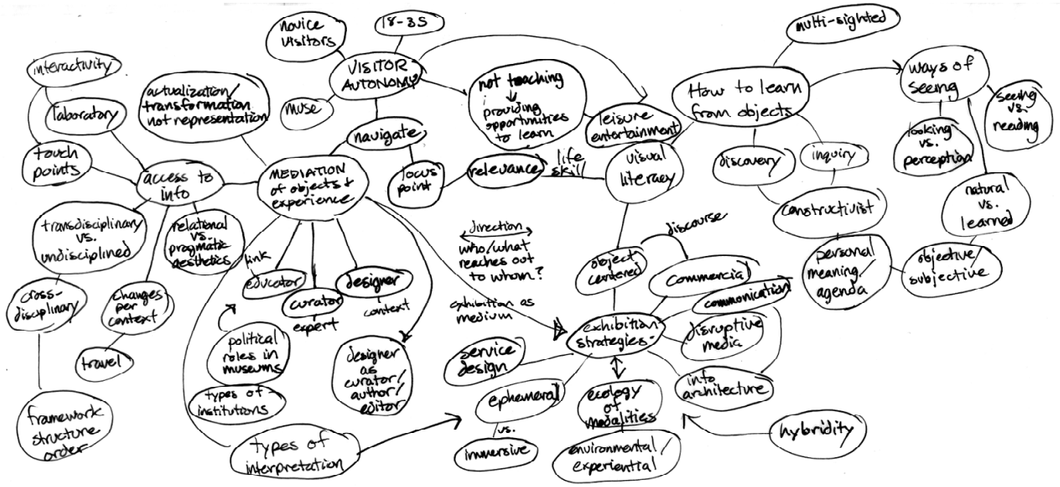
19. Lee Rainie "Tagging," *PewInternet.org*. 31 Jan 2007. Pew Internet and American Life Project. 10 Mar 2008. <http://www.pewinternet.org/PPF/r/201/report_display.asp>.

20. Harris Interactive. "Class of 2011 Brandishes Connections." *MediaVox*. 30 April 07. 17 MAR 08. <http://www.marketingvox.com/class-of-2011-brandishes-connections-consumer-clout-032420/>.

Bottom left:
Web 2.0 live Mind Map
by Markus Angermeier,
© 2005.

Results of a cross-disciplinary exploration of issues that informed and guided the design and development of the thesis project concept.

RESEARCH



Positioning Museums: What are Their New Roles?

> **Douglas Davis** The new museum must think of itself not simply as a repository, a guardian of the past, but a an agent of communication and a solvent in the present.[2]

What new roles can museums fulfill in order to remain relevant in contemporary society? The museum, as an institution, can be a place of education and entertainment. It is uniquely poised between today's information and experience economic ages. The museum, in most cases collects and stores knowledge in the form of objects and ideas. It shares its objects by contextualizing them with ideas, exhibits, and programming. However, with the increasing democratization of information, as well as ubiquitous access to free knowledge, there is a new expectation for access and transparency in museums, especially those operating in the public trust. It is important to remember that museums are not neutral or apolitical institutions. Transparency is imperative; as Danielle Rice points out, "museums participate in the social construction of culture, and the legitimization of power."[1] What are the museum's ideas, where did they come from, and why are they used to contextualize the objects? What about the visitors' ideas? Can the museum communicate them, involving visitors in the process of contextualization, and making them part of the museum experience, rather than the passive *experiencer*, or receiver of the messages the museum has to communicate?

Museums, recognizing issues of inaccessibility, have been moving towards more visitor-centric models. Most exhibits and programs, however, are still developed to communicate specific messages to and designed for visitors to achieve certain goals. What happens when visitors cannot access the messages predetermined by the museum, because they do not have the prior knowledge or simply do not find them interesting or motivating? Do museums' messages and goals hinder the visitors' experience? Can the visitors create their own messages and goals? Can these two things happen simultaneously?

While museums are thinking in terms of creating visitor experiences like commercial companies have, museums haven't been able or willing to make the costumer king in quite the same way that the for-profit businesses have been—designing their products and services to be endlessly customizable. Could or should the museum play a supporting role to its starring visitors? Customizable products and services allow for not only meaningful personal experiences, but engage visitors in creating or controlling those experiences. When researching the roles of museum, I found similar differentiation between the notions of visitor-centered experiences and visitor constructed experiences in the work of Hilde Hein. She thinks of the museum as a public artwork that should be built in collaboration with visitors in order to produce a sense of personal investment and identification. In her book, *Public Art: Thinking Museums Differently,* Hein says that the visitor must be included; indeed actively participate in processes that create knowledge and experiences within the museum. This is achieved by inspiring connections between visitors and objects that are both affective and constructivist, primarily in that she encourages as a creative process, the development of personal narratives.[3]

Can museums view visitor expectations of accessibility, transparency, and personal experiences as an opportunity to fulfill the unmet needs of a new market? Can museums provide a new experience by re-envisioning their service (how audiences access objects and information) and by making transparent the order/structure of their product (objects, information/knowledge) and its authors' intentions and biases? How can museums include visitors in the creation and organization of ideas? Could the museum let the audience offer its services? Can the museum reinvent itself as the information hub it once was before information was available at the touch of a button? Can it adapt, like the library has, in light of Google? Can visitors design the adaptation themselves?

1. Danielle Rice, "A Conversation on Object-Centered Learning in Art Museums." *Curator* (2002): 289.

2. Douglas Davis, "The Idea of a 21st Museum," *Art Journal* (1976): 253

3. Hilde Hein, *Public Art: Thinking Museums Differently,* (Lanham, MD: Rowman & Littlefield, 2006).

Content = Objects + Ideas

Museums would not be museums without the things they contain. Objects and ideas are what museums exist to protect and advance. Douglas Davis says, "The museum is content, not form. What counts is neither the building, the collection, the size of the staff, nor the budget, but what all of these separate systems communicate, as one whole entity."[4] While I would classify "the collection" as content, I believe in making sure the parts of the museum are unified and communicating as one entity with many voices, rather than as many individual entities. By acknowledging that there are many voices, it is possible to encourage audiences to question, or simply be aware of authorial presence. That being said, it is impossible to deny that museums also create a context, physically, socially, and mentally within which their content is experienced. Objects within museums are indeed automatically "recontextualized,"[5] and while context may be secondary to the content, it has a huge impact on how content is perceived and processed. An experience with content cannot be separated from its context. Shouldn't museums make transparent the order and spatial structure of the their exhibits, and allow visitors to question it?

> I try to unlock the meaning of objects by arranging them in ways that start conversations between them.[6]
>
> **Fred Wilson**

Museums = Content in Context

When visitors view an object, their experiences are heavily influenced by contextual clues coming from the surrounding physical environment. Museums often use contextual information about the object/s learned through scholarship such as subject matter, maker, function, etc. to guide the creation of spatial contextual systems. Taxonomies, such as historical art movements, geographic divisions, and collection classifications, created for the purpose of historical study and collection management are often opaque to non-expert audiences. These organizational taxonomies were useful in creating a critical framework, but not intended as viewing lenses.[7]

This is not to say that the creation and presentation of contextual information, i.e. factual information, interpretation, and criticism, is of less importance to the audience (although novice visitors may be disinterested). Contextual information also operates at the level of content. It is as much the purpose of the museum to guard these ideas as any object. Contextual information plays a major role in keeping objects, as well as museums, alive and relevant. The perpetual processes of research, re-interpretation, and criticism allow objects from many places and times to remain pertinent in continuously shifting social, cultural, and economic realms. These mission-driven practices also show that the museum, as an institution, acknowledges its responsibility to remain relevant, and the growing need to become relevant to multiple under-served audiences.

However, some of this knowledge is more suitable for determining spatial contextual structures than others. Taxonomies useful for managing collections are not necessarily the best way to organize exhibits or displays of objects. These categories too often divide works in ways that are more arbitrary than meaningful, especially in the eyes of novice audiences. What information is suitable for the task likely shifts with time and personal preference. Therefore, the predominant method of spatial organization driven by restrictive collections categorization and historical precedents must be overcome by the spatial contextual structure to become more meaningful to the target audience. The Tate Modern's installation by thematic genres: figurative, narrative/allegorical, landscape, still life, is a very interesting and recent example of the experimentation that is beginning to take place with spatial contextual structures. While these thematic genres are indeed historically rooted, they also offer what is in most cases, a very visible content-based relationship between objects.

Since the common museum taxonomies have become so ingrained in institutional practice, it may not occur to

4. Davis: 257

5. Susan Vogel "Always True to the Object, in Our Fashion, "*Exhibiting Cultures: The Poetics and Politics of Museum Display.* Steven D. Lavine, ed. (Washington, DC: Smithsonian, 1991): 192.

6. Fred Wilson, *Art Inside Out*, Chicago Institute of the Arts.

7. Angela Marsh, "Pragmatic Aesthetics and the New Visions of the Contemporary Art Museum: The Tate Modern and the Baltic Centre for Contemporary Art," *Journal of Aesthetic Education* 2004: 98–99.

most novice visitors to construct their own taxonomies as a means to create their own experiences with objects. What would happen if visitors were invited to make their own relational placements of objects and information, and therefore meaning? How might the proposed project investigate this question? How would this change the roles of various exhibit stakeholders, and the even the role of the museum?

There are many levels of spatial contexts existing simultaneously in museums. An encounter with an object is heavily influenced by its spatial context first at the exhibit level, then at the level of the architecture of the museum. An experience with an object begins with its immediate surroundings. An immersive space like a period room endeavors to project an accurate *exterior* context (physical and social surroundings) for an object, while white cube spaces (typical gallery space in modern and contemporary museums) attempt to negate the significance of *exterior* context to the meaning and appreciation of the object. In white cube spaces the primary context defaults to the relationships between content, the objects themselves, and the viewers' personal context for the object. Any encounter with content, in fact, is influenced by an *interior* context whereby "each visitor supplies another context, layer of meaning, by bringing previous experiences."[8]

A larger *exterior* context for an encounter with museum objects and ideas is that of the container, or structure that houses the museum experience. It is both architecture and site. A great deal of effort and resources has been placed in experimentation with the this larger context. It has been conceived of as spectacle and destination, and disguised as commercial and nondescript venues in order to escape the baggage and façade that comes with the museum as a temple-like institution. Museums, aware of the importance of context for visitors, have created satellite sites like sculpture gardens, small annexes in nearby communities, exhibit installations in airports, and virtual spaces in the form of web sites in order to create more appropriate and/or appealing contexts for their content. The perception of the museum architecture, as intimidating and institutional, has generally been a concern for museums for sometime now, particularly for those looking to remove barriers for new audiences. But, in reference to Davis's observation, changing the way this one part, the larger architecture or site, communicates to the audience is not effective. It must be communicating synchronously with the other parts of the museum.

It is now standard for museums to be extending their reach to virtual spaces. Nearly every museum has a web site, and it is an increasingly popular practice to have virtual exhibits or collections galleries. The virtual context for museum objects and ideas has taken on its own life. The virtual context has the potential to supersede or penetrate the micro/intimate and larger architectural contexts simultaneously because audiences can access virtual spaces in both types of museum spaces, as well as from anywhere beyond the museum where they have access to the virtual realm. Virtual spaces can also transcend *interior* and *exterior* contexts because they are built on spatial metaphors, yet they are malleable and personalized by how a single user chooses to approach the space, make it function, and generate his or her own content, uses and arrangements for existing content.[9] Furthermore, visitors in a virtual space can be given the ability to make and change relationships between objects and information at will, using different (even personal) information or content-based contextual structures. Therefore, the potential for the virtual context to unite all the other contextual systems found in a museum, as well as account for the *internal* (personal) context of individuals, makes it particularly suitable for experimenting with how content can be communicated effectively and synchronously by museums. It can allow for unified experiences throughout a multitude of contexts, and the transmission of many messages and voices via a single context or system.

8. American Association of Museums, *Excellence and Equity: Education and the Public Dimension of Museums.* (Washington, D.C.: American Association of Museums, 1992):11-12.

9. Jean Trumbo, "The Spatial Environment in Multimedia Design: Physical, Conceptual, and Behavioral Aspects of Design Space." *Design Issues* (1997): 24.

note:
Also see the Contextual Model of Learning, an existing contextual framework developed by John H. Falk and Lynn A. Dierking in *Learning from Museums: Visitor Experiences and the Making of Meaning* to explain physical, personal, and sociocultural contexts for learning (diagram on p.12).

Interactivity in Object-Centered Museums

> **Daniel Spock** — The more preoccupied a museum is with the object it seems the more interactivity is scorned as an interloper. [14]

The use of interactives in object-centered museums has been embraced, albeit on many occasions hesitantly, as a means of appealing to different types of learners and staying technologically updated. Interactives come in two main types, mechanical and digital. Interactives have become ubiquitous with all science exhibits, where interactivity helps to demonstrate phenomena, but have been more slowly adopted by object-centered exhibits. Interactives can help to diversify sensory experiences in object-centered exhibits where visitors are usually faced with the "rejection of anything more interactive than looking" itself.[10] Distractions from the objects are feared, and interacting directly with objects is usually prohibited for their safety. Therefore, the use of mechanical interactives in object-centered exhibits is understandably avoided so that visitors are not confused about what may or may not be touched. Like the fear that digitizing collections for display on internet would mean that people would no longer need to visit the museum to see the actual objects now seems unfounded, the fear that digital interactives in exhibits will mean that people will no longer engage with the objects needs to be overcome. An evaluation of the Micro Gallery, the National Gallery of Art's interactive collection, found that visitors used the interactive to plan their visit to objects they knew they wanted to see and, while looking for them, found new objects they were interested in locating; it was not used to replace the viewing experience.[11]

A large concern among museum professionals is striking a balance between democratizing information and learning opportunities for visitors without destroying their ability to have relatively unmediated (aesthetic) experiences with the objects—although most would argue that it is impossible to have a totally unmediated experience in any museum. Interactives, in their infinite variety, can aid visitors in finding relevant entry points to a museum's collection of physical and intellectual content that is largely intangible. Unlike a the majority of transmission-based interpretive elements in object-centered exhibits, "interactives don't teach. Rather, interactives provide opportunities for visitors to learn as they like."[12] They give visitors an opportunity to enter the content at their own level of knowledge and, given their individual motivations for visiting, pursue something of interest and consequence. Research shows that interactive engagement improves recall of content.[13]

Digital interactives can lend tangibility to the structure and delivery of the museums intangible content. The ability to physically interface with the content is important for both hands-on and experiential learners. The prevalence of computers and digital interfaces in the life of the target audience generally ensures that digital interfaces lack the novelty they once had and have the ability to blend seamlessly into the museum experience without distracting from the content. Fortunately, this also means the target audience is technologically savvy enough to make use of digital interfaces in a way that suits them. A study by the Institute for Learning Innovation on the use of digital interactives in the Speed Art Museum's Art Sparks interactive gallery confirmed that the experience increased student-visitors' comprehension of and engagement with objects, especially after repeat uses/visits (which the proposed project will encourage).[15]

A problematic issue about Art Sparks, and the majority of interactives in object-centered museums, is that they are often kept separate from the objects. They are kept out of the primary exhibition space, for fear of distraction and to prevent visitors from touching objects. As a result, they are set up to compete with the objects. In most cases, the visitor is either with the objects or with the interactives. The interactives are grouped elsewhere, often in education spaces where they may be perceived as being for children. This disconnect is a disservice to the visitor experience, and once again speaks to the need for the museum to communicate as a single entity.

10. Daniel Spock, "Is it Interactive Yet?" *Curator* (2004): 374.

11. M. Adams, and J.H. Falk, *Study of the Micro-Gallery at the National Gallery of Art, Washington, DC.* (Anapolis, MD: Institute for Learning Innovation: 1996).

12. Spock: 370.

13. Sue Allen and Joshua Gutwill, "Designing With Multiple Interactives: Five Common Pitfalls," *Curator* (2004): 199.

14. M. Adams, *Summative Evaluation Report of the Art Learning Center Art Sparks Interactive Gallery, Speed Art Museum, Louisville, KY.* (Anapolis, MD: Institute for Learning Innovation: 1999).

15. Spock: 369.

16. Allen and Gutwill: 199.

What happens when the visitor can see the real object, and investigate it interactively in the same room? There are some interesting examples of unobtrusive hand-held interactives being deployed directly in the gallery. For instance, there has been a great deal of experimentation with the delivery of various levels of interpretation through visitors' cell phones. Visitors, while in the gallery with the work, can call a number to get supplementary information if it interests them. While visitors are able to choose to use this interpretation or not, it is delivered using one-way communication, and usually through an expert voice, although sometimes they are theatrical in nature. A particularly effective type of interactive component in galleries enables visitors to manipulate objects virtually or via a replica in ways that they would otherwise be unable to, or makes visible information that would otherwise be imperceptible. Technology that aids visitors to see or observe in a new way, or create a new focus, can help the engage in the process of seeing more consciously and activity.

Digital interactives designed with the Constructivist education model in mind, having numerous possible outcomes and uses (many of which might be user-defined), seem to make the most of the technology while appealing to the greatest variety of visitors. "At the heart of interactivity is the reciprocity of action, in which a visitors acts on the exhibit, and the exhibit reacts in some way."[16] The more ways the audience has to act on an exhibit, the greater the possibility they will find that it reacts in a way that is meaningful to them personally. The front-end survey showed that a majority of the target audience preferred to follow personal interests and establish their own path, as well as modes of inquiry. The potential for digital interactives to expand the amount and diversity of the information available can aid this audience in their quest to create their own meaningful experiences. "Meaningful experiences are those that provide choice and control in the exploration of the ideas, concepts, and objects."[17]

17. Maria Adams, Jessica Luke, and Theano Moussouri, "Interactivity: Moving Beyond Terminology," Curator (2004): 155.

Chinese Proverb

Tell me and I will forget...
Show me and I may remember...
Involve me and I will understand.

What Can the Museum Learn from the Library?

The two institutions, museum and library, are undoubtedly linked in their missions to collect, preserve, and share information to the public through objects. Yet, the library seems to be ahead of the museum in terms of accessibility and relevance in a few ways that are significant to the target audience. While it would be futile to say that the library is not an intimidating institution, because it is for many of the same reasons and for the same people that are intimidated by museums. There are, however, some fundamental differences that affect the perception of museums versus libraries.

Bottom Left:
Denver Public Library
by Michael Graves
photo: Timothy
Hursley

The first, and perhaps the less consequential difference, is that libraries have less elitist acquisition practices than museums. Libraries are as much of a sanctuary for popular fiction as they are for fine literature. Libraries will even make acquisitions at the publics' request. While it is much more feasible when speaking about a twenty dollar book than, let's say, a twenty million dollar painting, the fact that the museum (there are exceptions of course) is not a temple of popular imagery in the same way makes the museum less relatable, and therefore less accessible.

Secondly, the library, as an institution, has a relatively transparent and standardized system for how its objects are ordered and their information is accessed. The Dewey Decimal System and the very similar Library of Congress System allow patrons to find any book by its call number. In comparison, museums use accession numbers that are particular to individual museums, and generally arbitrary in terms of their meaning.

> **Bradford Lee Eden**
>
> ...traditional information organizations such as libraries and museums will be hard pressed to compete and maintain market share in the coming information revolution. [18]

They rarely convey information beyond chronology, if they are even that consistent. While searching the card catalog was certainly a menacing task in the past, the indexical system could be learned. With the library's embrace of technology, however, came the advent of the user-friendly digital card catalog. Searchable, like Google, by a multitude of indexical categories including author, title, subject, and keywords, the digital card catalog allows the user to determine how best to use the given information in terms of what contextual connections between objects they are looking for. Of course, like in a museum, once the information is found, there are still issues of literacy that must be overcome to make meaning. The idea here is that at the library, because of the general familiarity people have with using internet search engines, there is much greater potential for users to find the particular book they are looking for, as well as related books, since digital card catalogues allow users to indicate contextual preferences when searching. The search results provide the call numbers, which allows the user to navigate directly to the books stacked in numerical order.

At the museum, in many ways, the novice visitor still faces a task much more like searching a manual card catalog. It may be more enjoyable to wander until one stumbles upon something of interest, which is in itself meaningful as a response to the technology (or lack there of). While perusing may certainly be a useful way to stimulate personal inquiry, it will only be through chance that connections are made that

18. Bradford Lee Eden. "2D and 3D Information Visualization: The Next Big Internet Revolution." *College & Research Libraries News* (2007): 247.

New York Public
School Library
by Pentagram

will make the random findings memorable. This project will assist or facilitate the making of meaning and memory for wandering visitors by illuminating possible connections, as well as recording any personal connections the users make on their own.

Where museums have an interesting edge in terms of accessibility is that their objects can be seen (assuming its visitors are not blind) and perceived without any training whatsoever, allowing visitors to have aesthetic encounters with collections literally without effort. However, like books, visitors looking for more information and meaning, must learn to read objects/images as they must learn to books/words. The primary collections of the library require reading before its content can be experienced, and are therefore inaccessible to the illiterate except where there are images.

Libraries, in their quest to remain relevant, have also embraced and experimented with technological innovations that the target audience has come to expect and appreciate. Namely, their digital catalogs have been archetypal data sets for experimental information visualization systems that engage users in interesting virtual experiences. They also have begun to circulate audio and e-books, and there have been tests of automatic book dispensing machines in New York Public Libraries, that for a small price, print and bind books on demand from a vast digital database.[19]

Libraries have also taken a few notes from the commercial realm, especially booksellers. They have user-friendly web sites that allow users to search their collections, track their reading, create wish lists, read/write reviews or rate books, and browse recommended books like they might on amazon.com. There are self-checkout kiosks like those at grocery stores, and library cards now mimic store discount card keychains. Many recently built or renovated libraries look more like Barnes & Noble inside, café and all, than one would have ever imagined. The bookstore atmosphere is no doubt popular with the target audience, as well as with older adults that compose most object-centered museums' primary audience.

It was my realization about how open the library has been to adapting and competing with commercial industries that initially prompted me to look at it what museums could learn by example. It also compelled me to investigate and embrace what commercial industries are doing to engage the 18–30 audience. After all "U.S. advertisers still view 18-30-year-olds as the prime demographic target."[20] I think it is probable that museums may benefit from the same openness to the commercial atmosphere that the library has adopted. The target audience likely feels more at home and welcome in the commercial realm because of its familiarity and proliferation. How can we make the museum more welcoming? How can museums build in reinvention/adaptability? Why can't museums compete to share a slice of this very profitable target market if libraries are managing to do so?

19. Jason Epstein, "The First Expresso Book Machine," *PRweb.com*. 21 Jun 2007. 10 Jul 2007. <http://www.prweb.com/releases/2007/6/prweb534914.htm>.

20. Sarah Boumphrey, "Beyond Bling," *Euromonitor Archives*, 29 Aug 2007, Euromonitor International, 1 Mar 2008 < http://www.euromonitor.com/Beyond_bling>.

Seattle Public Library
by Rem Koolhaas and Office for Metropolitan Architecture
photo: Witold Rybczynski

Information Design & Visualization

> Interpretation of data is the act of creating meaningful information. [24]
>
> **Scott Townsend**

The process of exhibition design can be approached as an information design problem. Information design, or information architecture as it is sometimes referred to, is the practice of interpreting information graphically in order to communicate more immediately, and hopefully effectively, meaning (not the meaning, but rather a chosen message about specific data) of a complex or vast data set. Although characterized by two-dimensional charts and graphs, information design also operates on the environmental level assisting users to navigate not only information, but space. This approach to exhibition design was recently pushed into consciousness by the book *What is Exhibition Design?*, which explained that exhibitions "apply graphic information to place and object."[21] In fact, exhibits can communicate using not only "graphic" (visually sensed), but multi-sensory information to place an object (or idea) in a contextual environment and experience. This description positions design as an informed mediator, not just an aesthetician. It also allows exhibit design to function like metadiscourse because it frames exhibition as the contextualization of the museum's tangible content (its objects) within its intangible content (its information). This link led to an investigation of the use of metadiscourse in design, which resulted in the discovery of an interesting article called "Visual Metadiscourse."

Like metadiscourse acts in writing, visual metadiscourse creates transparency by utilizing cues to help users determine how to approach a design's structure and process its content. This description already sounds analogous to the function of exhibit design, yet there were two specific roles that seem particularly applicable to exhibits. First, the design should reveal the boundaries and depth of the information up-front.[22] This view of the whole is sometimes referred to as the fish-eye view in web design, and is exemplified by the site map. Secondly, the use of transparent and cohesive visual cues, like color- coding, define parts of the whole and allow users to locate themselves within the whole of the structure.[23] Bubble diagrams used during the development process to organize exhibits often explicitly lay out how parts relate to the whole. Why wouldn't we show the diagrams to visitors in order introduce them to the structure? Perhaps it could act as a more effective early organizer, a legend rather than an introductory panel.

In considering using information as a contextualizing structure in exhibitions, it is easy to see how "structure often becomes part of the content rather than transparent means of carrying the message."[25] While this fusion can be perceived as problematic because it may imply that it is the only or best structure for presenting the content, the fusion can be positive depending on the situation. Creating metaphorical structures can add to a narrative experience that is often affective. Uniting the content and structure could also strengthen the gestalt of the experience, which again speaks to the museum communicating synchronously. Many objects have their own internal information structures. Narrative paintings can behave as snapshots, as well as storyboarded imagery, by showing the progression of scenes over time although they exist simultaneously. Don't we inform viewers what paradigm is being used? There are also media/techniques that lend themselves to the visualization of the creation process. We often bring these examples to the viewers' attention. If the exhibit is structured using chronology, interpretive concepts, or object classifications (etc.), shouldn't we also be explicit about that structure?

21. Jan Lorenc, Lee Skolnick, and Craig Berger, *What is Exhibition Design?* (Hove: Rotovision: 2007): Back Matter.

22. Eric P. Kumpf, "Visual Metadiscourse: Designing the Considerate Text," *Technical Communication Quaterly*(2000): 401–24.

23. Kumpf: 409–10

24. Scott Townsend, "Unfolding the Surface of Information," *Design Issues* (1998): 5.

25. Townsend: 6.

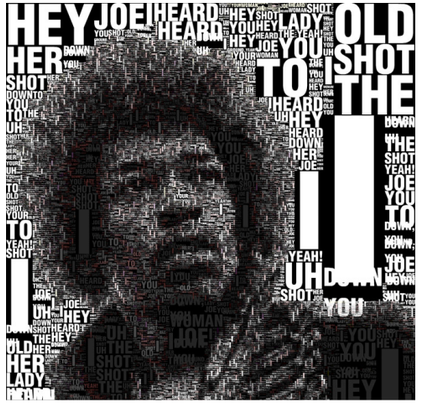
Information Visualization

Information visualization could be defined as the visual, and often interactive, representation of information intended to facilitate cognition. It is a more recent niche of information design that has developed with the advancement of digital technology and the internet. Its primary relevance to museums exists in its potential to transform information stored as static and linear artifacts into dynamically indexed (non-linear) and multi-dimensional systems, which allow users to see multiple views of the same information (information parallax). The systems engage users in visually interfacing with, and constructing meaning from information via the creation of spatio-temporal connections. The connections, or "networks" of information, ideally enable perceptual inferences and enhance pattern recognition."[26]

> "2D and 3D environments have been in the marketplace now for more than ten years, and the current generation has grown up interacting and collaborating with these technologies on a daily basis. When they walk into our one-dimensional text environments...they quickly become bored and frustrated with our 'medieval' and 'antiquated' ways to provide access to information. We need to step up, and become experimenters and innovators with our information resources, presenting them in new and exciting ways to our users. If we do not, we consign ourselves to the oblivion of becoming "museums of knowledge" that make little difference or use to the everyday human experience of life."[27]

The use of spatial metaphors has become ubiquitous in virtual space. They are intuitive for most internet users, and particularly for the target audience. We start at the homepage on the site, we navigate a path through chat rooms, forums, and portals. What seems to be understood more readily in the creation of virtual environments is that "designer defines how the information is organized in space, but the user determines how the space functions, is perceived, and conceptualized."[28] Like in museums, there are many thresholds in virtual space, which means "everywhere must be considered as a potential entry point to content."[29] Because the target audience commonly chooses to wanders in labyrinthine museums until they find something of interest, this consideration becomes imperative.

When engaging with virtual environments, "spatial memory is used to create mental maps that allow us to repeat actions, retrace paths,"[30] and remember geographic relationships between content. A site's effectiveness is often dependent on visual cues that aid users in locating themselves and the information they are experiencing in relation to other spaces and their content. Successful virtual spaces also employ the use of intuitive navigation structures that are characterized by a continuity of actions and behaviors that make the act of transitioning between spaces easily perceptible, but thoughtless. What virtual spaces require the user to do is create a map in his or her mind of content's spatial relationship to other content. This is also what educators require visitors to do in order to make / evaluate learning using cognitive maps, a tool that asks visitors to reflect on and reconstruct their experience in order to gain insight about what visitors are learning. It is the creation of these hierarchical mental connections and non-hierarchical associations that our brain uses to make long-term memory. How can we encourage such mapmaking or use of spatial memory in exhibits?



Interactive tag clouds that take the shape of content developed by Gui Borchert and Noel Billig, 2007

26. Eden: 250

27.Eden: 251.

28. Trumbo: 24.

29. Trumbo: 24.

30. Trumbo: 26.

Active vs. Passive Viewer/Object Relationships

Educators no longer think of visitors as *tabula rasas*. The recognition of learning as a personal process has placed museum education in a unique and important position. While many of the theories and methodologies implemented are harder to evaluate than those used in formal learning environments, their potential impact is often worth the sense of experimentation or risk. Learning can be vaguely described in terms of changing behavior and reorganizing knowledge, and is achieved through play, discovery, and construction.

> **Ronne Hartfield**
>
> ...endow[ing] them, each and all, with the ability to observe, ponder, reflect upon, delight in, challenge and be challenged by, fight with, love, hate, take in, live with, and be permanently changed by some moment of contact with great works of art. The privilege to perceive, enlarged by the confidence to engage in questions of meaning, allows viewers a new place in the polity of citizenship and affirms their fundamental power to be active agents in shaping the image systems that inform the imaginative and mythological structures reflecting our collective reality.[31]

There has been a shift towards visitor-centric experiences (probably driven by commercial trends and growing neuroscientific knowledge of learning processes), a growing understanding that "the viewer has agency and is not just a passive recipient."[32] Objects and interpretive components are no longer particularly passive either. They can be employed to enlighten, question, provoke, etc. For instance, consider the active use of objects in Fred Wilson's iconic *Mining the Museum* and provocative interpretation in Bruce Mau's *Massive Change*. There has even been a vast shift in artistic intentions towards embracing the viewers as participants which are required to complete the work or otherwise bring it into existence. This project will extend this practice by fostering exhibits that exist in a dialectal relationship with their visitors. Without visitors, there really is no exhibit, or it is in a sense dead and static without human interaction. Joaneath Spicer equates exhibition to a "conversation" and suggests that such an exchange can "promote ownership of ideas."[33]

It would be an impossible task to see that every visitor is engaged with every object; luckily museum visitors are often motivated to engage with and learn from things on their own. As the front-end survey showed the target audience is especially interested in pursuing their own interests during a museum visit. So rather than directly passing information to the visitor in a one-way transaction, it becomes imperative and more efficient for the museum to make tools available to invite personal investigation and to create an inclusive atmosphere and privilege the audiences' voice. Placing the viewers in an active role means that they can seek what is personally meaningful rather than be told what the museum believes to be important. "If the viewer has developed an empathy for, or a specific interest in a work and has arrived at a personal understanding of its significance and meaning and then he/she will want to know about its context and what informed sources, including the artist, have to say."[34] After visitors have had the opportunity to personalize their experience with objects they might be more compelled to seek additional contextual information to expand their knowledge. Putting the visitors in an active role encourages them to engage in a process of constructing new associations to content with which they are already intrigued.

The project is intended to improve visitor agency within exhibits by both aiding visitors to find objects that intrigued them, and investigate them as they see fit, and create an exchange with the exhibit.

31. Ronne Hartfield, "Challenging the Context: Perception, Polity, and Power," *Curator* (1994): 62.

32. Keith Walker and Liz Smith, "Creative Disruption– A Task-Based Approach to Engaging With Original Works of Art," *Journal of Art & Design Education* (2004): 17.

33, Joaneath Spicer, "The Exhibition: Lecture or Conversation?" *Curator* (1994): 185.

34. Keith Walker and Liz Smith: 24.

Personalizing Experiences with Objects

John Dewey argued that art was a form of "intensified experience" and that experiences with art could not be separated from experiences of daily life.[35] Paradoxically, the process of preserving objects for the public most often means separating them from their original contexts and functions. As a result, the museum has been questioned as the ideal setting for objects because of the institution's inherit properties that recontextualize the works, and are perceived as misrepresentative or inaccessible by many audiences. Making objects physically and intellectually accessible becomes a balancing act. How can visitors who perceive objects in the museum as precious and separate from life be encouraged to reconnect objects to the everyday realm?

Many exhibitions and interpretative tools are created with the hopes of prompting the type of "transformational" experiences lauded by Dewey despite the institutional forces working in opposition. Dewey believed that "a critical framework can interfere with our ability to engage" with art in museums.[36] Educators and designers alike have found that "through theme and narrative, audiences are empowered to engage with art through a heuristic process, bridging the lexicon of art to personal experience."[37] The discovery that there are multiple languages and vocabularies at play simultaneously in the interpretation of any given object can show that there is validity in multiple interpretations, including a personal one. In a 1999 article entitled "The Culture of the Museum" T. Jackson noted that "Galleries have begun to relinquish their exclusive position as uniquely competent explicators of art. Instead, they have opened a discursive, context-sensitive space in which visitors are encouraged to actively participate in interpretation."[38] I find in this statement, written nearly a decade ago, an admirable goal, to which I hope my project is able to contribute, as progress in this direction has been slow.

A study conducted in 2003 by gallery educators in England and the Czech Republic revealed that young adults are conscious "that personal experiences permeate responses" to objects.[39] The study focused on the complications caused by the semiotic analysis of art when the meanings of signifiers in old painting were missing from contemporary vocabulary. They found that the young adults studied were likely to replace, or project upon any signs/codes they found meaningless their own high-tech narratives, expectations, and values to make the work relevant and/or meaningful. In particular, the young adults interpreted 'outer-codes,' i.e. material value, consumer culture, and social cues, in great detail.[40] I find this level of participation in the creation of language and interpretation encouraging, especially as far as it may suggest that the target audience would be willing to re-tag signs.

I hope to exploit the multiplicity of languages by increasing the audience's access to information generated by multiple disciplines associated with different types of museums. For instance, the interpretation of the same or very similar object in an art museum would be different if generated by an anthropological museum. Can the project allow visitors to tap into these differences in order to cross-reference ideas, thereby increasing their ability to find a comfortable entry point to multiple other conversations? Can the audience be afforded the opportunity to have a purely Constructivist experience from which the validation can only come from within the individual, as well as the ability to seek verification of their hypotheses as they might if they were participating in scientific inquiry?

35. John Dewey, *Art as Experience*, (New York: The Berkley Publishing Group, 1934):19.

36. Marsh: 98.

37. Marsh: 94.

38. Jackson, T. interviewed by P. Meecham, "The Culture of the Art Museum," *Journal of Art & Design Education* (1999): 89.

39. Marie Fulkova, Alison Straker, and Milan Jaros, "The Empirical Spectator & Gallery Education," *Journal of Art & Design Education* (2004): 10.

40. Fulkova: 4–13.

Reconstruction & Continuity of Experiences

Meaning, in the constructivist sense, is cannot be reached solely through the context and process of viewing. Rather, it requires the viewer to reconstruct, reflect, or otherwise manipulate the work in response to their viewing experiences and engagement with the exhibition components. "For experience, as Dewey insists, involves both the receptive undergoing and productive doing, both an absorbing and responsively reconstructing what is experienced."[41] The project is intended to encourage participation by doing and responding, but most importantly engage individuals in the re-creation or mapping of their experiences.

The reconstruction of a museum experience could be compared to the process of building a personal "*museé imaginaire*," a vision in the mind's eye of all the objects one has seen. André Malraux describes the *musée imaginaire* as vast collections in mind of the collective culture (Western) consisting of (art) objects we have seen. It is larger than any individual museum and includes objects seen in situ, like monuments or murals. Malraux's definition of museum objects, although originally limited to fine art, expanded as a result of new ways of seeing (likely referring to new methods of interpretation developed by evolving academic disciplines, such as material culture studies), recognition of constantly shifting world views, and increasingly inclusive museum practices. The idea of the *museé imaginaire* became more general, representing objects from many cultures, time periods, and eventually objects that were not made in artistic interest could be added by cultures (or individuals) if deemed important for their aesthetic, historical, or sentimental value.[42]

Individuals likewise assemble collections in their mind's eye that are reflective of their particular conditions and experiences. This idea speaks to the continuity of our individual experiences with museums, and between museum and life experiences. The collection we amass individually grows over our lifetime, and as it grows, our opinions and associations about the things we encounter change. Sight is a constant physiological process responsible for the majority of our learning and sensory experiences,[43] including the creation of our collection of object experiences from childhood onward.

"The principle of the continuity of experience means that every experience both takes up something from those which have gone before and modifies in some way the quality of those which come after."[44] In mapping their museum experience, visitors will have the opportunity to arrange the objects they experience in ways that are personally meaningful based on previous knowledge associations. In addition, they can also change or add complexity to their maps as they make connections during and after their visit. The maps and content each user generates will be saved so they can be accessed during future museum experiences (or anywhere by accessing the user profile on the web site), so that they can continue to build and reorganize their knowledge of their experiences continuously. A unique and important part of this project is that it will suggest ways in which the user can meaningfully continue their experiences by analyzing what they create. Specifically, the suggestions will lead to objects in other institutions of many types; for instance, a user who has shown interest in pointillist techniques might be led to a science museum where there is an exhibit about the perception of color.

41. Marsh: 100.

42. André Malraux, *The Voices of Silence* (New York: Doubleday, 1953): Part 1.

43. Laura Sewall, *Sight and Sensibility: The Ecopsychology of Perception* (New York: Reed Business Information: 1999): Chapter 1.

44. John Dewey, *Experience and Education,* 1997 ed. (New York: Touch stone: 1938): 35.

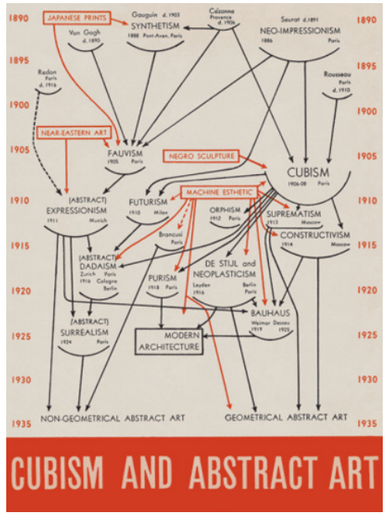
Cognitive Mapping

Maps generated by users through interaction with this project are essentially cognitive maps. The idea behind cognitive maps relates to the natural internalization of visual and spatial information due to the prominence of our visual sense in our daily lives and learning experiences. This type of memory is ultimately intuitive for everyone, yet like all types of memory it happens for different people on different degrees depending on their innate learning styles.

People create and store mental maps of the places they encounter and their experiences within those places. The maps are updated continuously with each new encounter in the space. "How visitors explore the environment... and what they ultimately pay attention to, will be largely guided by their internal map."[45]

Historically, cognitive mapping has been used as a tool for evaluation, gauging visitors' understanding of topics presented in museum exhibits or programs. The maps are analyzed both for the spatial organization of ideas, which represent associations between the ideas in the maker's memory, and/or for the maps ability to accurately reflect the maker's experience by comparing it to reality." Spatial elements that are understandable and thus familiar in some sense may be presented on the map. Elements that are unfamiliar may be distorted, omitted, or translated in some manner. The cognitive map thus encodes a person's understanding of familiarity with an environment, leaving gaps for images that are not understood."[46]

What evaluators using cognitive mapping have learned is that "while the pictures stored are not necessarily correct ones, they guide how people move through environments, how they chose new stimuli, and ultimately how they process new experiences mentally." [47] The maps created in response to an evaluator's prompt are characteristic of a particular moment of understanding. Mentally "these maps, however, do not simply represent the worlds of our experience in a passive and unchanging way. They are, in fact, dynamic models of the environments in which we carry out our dynamic lives, and as such determine much of what we expect, and even what we see. Thus they represent and at the same time participate in the creation of our individual realities."[48] This development in our understanding of mental maps as dynamic has led to changing methodologies for use of cognitive mapping as an evaluative tool. Evaluators most often compare multiple maps made by visitors, for instance one made pre-visit and a one made post-visit, or a map made on visit 1 and a second on visit 2.



This project seeks to harness some of the influential power of the visitors' dynamic mental maps by making the intuitive act of mapping a conscious effort, which will aid visitors in their individual exploration, as well as make reflection and reconstruction of experiences (essential steps in the Constructivist learning process) an intuitive and engaging physical task. While the user will control the process of mapping as much as the program can allow, the program will be built to encourage the user to re-map or make new connections on old maps, especially over the period of multiple visits, in order to mimic the continuity of change in mental maps. The maps created and re-created by visitors as a part of their engagement with the objects also can be harvested by museum evaluators for information that can help them better serve their audiences.

Left:
Cover of MoMA exhibition catalogue published in 1936

45. Diamond: 128.

46. Judy Diamond, *Practical Evaluation Guide: Tools for Museums & Other Informal Educational Settings.* (Walnut Creek, CA: AltaMira, 1999): 128.

47. Diamond: 124-126.

48. Ervin Lazlo, et al. *Changing Visions, Human Cognitive Maps: Past, Present, and Future* (Westport, CT: Praeger, 1996): 3

Task-Based Approaches & Creative Disruption

Self-motivation is a driving force of informal learning, and active/interactive experiences are the vehicles. Engaging visitors in tasks can be an excellent way to facilitate activity and inquiry, as "inquiry begins with a problematic situation, a question, an idea that has become relevant precisely because it creates an immediate emotional or intellectual unease."[49] The tasks themselves do not need to have predetermined outcomes. Tasks that simply "interrupt the flow of an experience can stimulate reflection and memory of an experience."[50] Tasks need only to create an entry-point to jump-start personal inquiry, and provide problems or unease that will create interest for continued inquiry throughout the visitor's journey.

While museums hope that the visitors learn and make meaning throughout their visit, what knowledge, and to what extent they dive into the information should be of their own choosing. It seems that providing the tools that enable visitors to find information on demand would be great way to engage viewers in activity, while providing tasks that lead to specific information would be counterproductive because they lead to an end or outcome, rather than promote continued exploration or prompt new questions for the participant.

One method of creating unease or questions is through the process of "creative disruption," or prompting visitors to reconsider their preconceptions about what they are seeing and experiencing, and by engaging visitors in perceptual tasks that help them reorganize their thoughts and attitudes based on their personal experience.[51] A study conducted with university students in England at an exhibit titled *Air Guitar: Art Reconsidering Rock Music* revealed that a "task-based approach increased tolerance of multiple readings and willingness to share personal interpretations."[52] An example of a perceptual task that supported creative disruption was that individuals were asked to create a list of words in a "stream of consciousness" style about an object (as one might do while tagging work in the project). Then they were asked to consider what the words said about them as the author, and how the words might influence another's reading of the object. They were later able to able to see the lists of other participants to see what words seemed to describe the work collectively, as well as see how others' words influenced their perception of the object.[53] Tagging and other user-generated content would similarly prompt a creation of a collective language surrounding an object, and the perceptual dialogue instigated (as a result of creative disruption) by the addition of uncommon words.

The primary task shaped by the project is the physical transformation of visitors' cognitive maps into visual/virtual representations that symbolize their individual contexts, narratives, and understanding. This is accomplished when visitors both collect objects, which automatically creates a chronological map of their experiences for reference, and then impose their personal order upon the objects by making new relationships during or after the visit based upon logic of their choosing. By making visual / physical their mental maps, as well as generating content through tagging their maps, users create opportunities to communicate their ideas to others using the visual representation (a map of their associations to and between objects), or by using the map to help organize verbal ideas.

49. Tom Hennes, "Rethinking the Visitor Experience: Transforming Obstacle into Purpose," *Curator* (2002): 116.

50. Hennes: 114.

51. Keith Walker and Liz Smith, "Creative Disruption– A Task-Based Approach to Engaging With Original Works of Art," *Journal of Art & Design Education*, (2004): 16–25.

52. Walker and Smith: 24.

53. Walker and Smith: 18.

Museum as an Obstacle

> **Tom Hennes**
>
> If museums see their purpose primarily as imparting knowledge, synthesizing specific messages and constraining the outcome of experience to a common set of ideas and concepts, then the way visitors actually use museums is an obstacle. If, on the other hand, their goal is to increase the visitor's own capacity for a broader experience, offering a variety of specific knowledge [information on demand] along the way, then Dewey offers insights into greatly expanded possibility. His work shows ways to see visitors' native tendency to follow their own pursuits not as obstruction to positive outcomes, but as the primary means for achieving them. Instead of trying to impose their own priorities onto visitors, museum's can harvest visitors' priorities [literally through tracking] and offer ways of expanding them into richer purposes and interests [suggest new ways of seeing, and more objects and institutions to experience].[54]

It is likely the target audience would find the museum to be an obstacle for the reasons Hennes outlines. However, in thinking of the subtitle of Hennes' article, "Transforming Obstacle into Purpose," I began to wonder how the obstacle itself can be an attribute. An obstacle presents a problem, which can engage the visitor in inquiry, interrupt their flow, and otherwise motivate them to actively respond to their experience.

In relation to my project, I considered some of the obstacles for the target audience and imagined how remedying the issues might become a purpose or task for visitor engagement. If the primary issue for visitors is inaccessibility of the information that interests them, then engage them in creating their own means of access. If novice visitors are unable to navigate the context (intellectually or spatially) and order (taxonomies) of the objects they experience, give them the tools to map and classify the objects as they personally see fit.

54. Hennes: 112.

Learning from Objects

A Note About Process

My personal inquiry about how visitors learn from or access information from objects in museums was a major motivator for this project. It has also been the most illusive, difficult to grasp, and impossible to research. Not because there is a lack of information, rather I have been unable to find an entry-point in which to root myself amongst every (conflicting) thing that I read. I only have my personal experience or context, as someone who believes she learns from objects, and has been educated in many methods to do so. And my personal experience as an exhibit designer, in which I try to help others learn from objects by creating experiential contexts with narrative, visual, spatial, and conceptual relationships, as means for engaging with or accessing the information from objects. Even with this personal experience (I am still just a student of course), I really had no idea of the complexities and contradictions surrounding discussions about how people actually learn from objects. I feel like I was lucky to find a consensus that people actually do learn from objects. While I have researched a lot of perspectives, I found no one explanation that I felt accounted for my personal experiences learning from objects, or those experiences of others in the target audience that I talked to or surveyed, and thus will uphold the contradiction. I will attempt to summarize various viewpoints about learning from objects, and then draw a visual metaphor that I think is representative of this project and its target audience.

Seeing and Reading Objects

Some researchers believe that everyone can learn and make meaning from experiences with objects because we do so automatically in our interactions with the daily world from the time we are born. Others think "most visitors, unaided, have access to only a narrow range of meaning and have not developed basic observation skills in areas where they have not special expertise."[55] While it is true that there is a great deal of information to be retrieved from an object simply through empirical analysis, or sensory observation (even though it is often limited to visual observation in museums), it is likely that people, depending on their learning style, have different capacities for observation. After all, it is one thing to look or capture something within your cone of vision even though it might not be of interest or even be noticed, and quite another thing to see or direct your gaze in order to absorb or analyze it. Furthermore, there are many culturally conditioned ways to see. For instance, one can see objectively, or according to rules that limit the viewer's participation in perception of what they see, or subjectively which renders the viewer a conscious participant in the creation of their perceptions that are influenced by their personal and cultural context.[56]

It seems undeniable that people have primal capabilities that allow them to learn about objects through sight and empirical observation alone. This idea is championed by the "*aestheticist* position," which promotes limited interpretation

55. Hennes: 115.

56. Sewall: 36–40.

of objects, allowing the viewer to have a pure or unmediated aesthetic experience with objects. This position assumes that visual information or language, as they might describe art, is universally accessible. How then do we account for when "viewers encounter art they do not understand."[57] If we consider how the process of seeing works, that we see the many parts of an object that the brain then assembles together in a remembered pattern of a whole,[58] what if viewers do not have a previous experience or pattern with which to connect the parts they are seeing? They would need to use skills other than empirical observation to make inferences about what is before them. In museums, we use interpretation to fill in the gaps of novice visitors, but this often creates a dependence on the expert that is disliked by the target audience.

For all the things that we can see, what about the numerous things that museum objects represent, communicate, and mean that are not intrinsic to their visual appearance? For instance, many objects are laden with symbolic use of imagery, color, and form that novice visitors cannot be expected to know about. Visual symbols, like words, often arbitrarily gain their meaning, and are culture specific. For example, black is the color of mourning in some cultures while white means the same thing for others. From the *relationalist* point of view,[59] "The individual [art] object, instead of being seen as a pleasing combination of formal elements is treated 'as an element of discourse' within a variety of social, cultural, and political contexts."[60] People must learn the how to connect visual clues to their meanings in context since they are not naturally formed. Object makers, like artists, both use and subvert these symbols in order to create layers of meaning in their work that are generally inaccessible to novice viewers. As a result, the process of learning from or decoding these visual symbols has been likened to the process of learning language, and how to read "object[s] as text."[61]

Many education models have been built with the goal of increasing the "visual literacy" of museum visitors, most notably perhaps, the Visual Thinking Strategies developed by Philip Yenawine based on Abigail Housen's Stages of Aesthetic Development.[62] Although, if it is believed that visual literacy skills must be learned, how do we account for the many successful experiences novice visitors' have with objects?[63] The idea of "visual literacy" seems to be primarily useful in its introduction of "reading" as a metaphorical model for how we decode objects. The goals of language literacy and object study also overlap in the way they promote development of social and cultural understanding, as well as communication skills.[64] However, the idea of "reading" is misleading as a literal translation of the reading process into the process of learning from objects. The definitions of "visual literacy" are numerous, and vary on a continuum between metaphorical and literal analogy for processing meaning from objects.

Reading is a linear process. Readers proceed through a text word by word to construct a whole from which they take meaning. In addition, words generally have more specific or universally accepted meanings, although they too can be interpreted on metaphorical and symbolic levels. In comparison, objects do not communicate linearly. The viewer perceives the whole or pattern from parts that can be viewed in any order. There is no right part to see first, nor are the meanings of the parts necessarily agreed upon or universal.[65] Therefore, the use of "visual literacy" in this project refers strictly to a metaphorical shorthand for a decoding (converting symbols into a meaningful message) process. Two useful definitions for the project include simply the "ability to receive and send visual messages,"[66] and "the active reconstruction of past visual experiences with incoming visual information to obtain meaning."[67]

Visitor studies conducted by the Winterthur Museum show that visitors have four common entry-points to objects, which are non-hierarchical, or not dependent on knowing one before the other. Descriptions include "observable identifying characteristics" of an object. Associations created "historical and personal context" for an object. Classifications place an object in a "type or group." Evaluations are "personal judgments" about an object's qualities.[68] Visitors were able to

57. Danielle Rice and Phillip Yenawine. "A Conversation on Object-Centered Learning in Art Museums," *Curator* (2002): 289.

58. Twiss Houting, Beth A., "Visual Gateways to Learning." Paper presented at *Old Collections, New Audiences: Decorative Arts and Visitor Experience for the 21st Century.* Dearborn, MI: Nov 1999.

59. The relational aesthetic position is an outgrowth of a theory developed for critiquing contemporary art whereby "artworks are judged based upon the inter-human relations that they represent, produce, or prompt." See Nicholas Bourriaud, *Relational Aesthetics.* Translated by Simon Pleasance & Fronza Woods. France: les presse du réel, 2002.

60. Rice and Yenawine: 289.

61. Pauline K. Eversman, et al. "Material Culture as Text: Review & Reform of the Literacy Model for Interpretation." *American Material Culture: The Shape of the Field.* Ann Smart Martin, and J. Ritchie Garrison, (eds.) (Winterthur, DE: Henry Francis de Pont Winterthur Museum, 1997): 136.

62. Phillip Yenawine, "Jump Starting Visual Literacy." *Art Education* (2003): 6–12.

63. Eversman, et al: 143.

64. Eversman, et al: 155.

65. Eversman, et al: 138.

66. Landra L. Rezabeck. "Why Visual Literacy: Consciousness and Convention." *TechTrends* (2005): 19.

67. Richard Sinatra quoted in Eversman, et al: 156.

68. Eversman, et al: 146–7.

use all of these categories to connect with objects in varying capacities, although interestingly, they were most likely to use Association as an entry-point to objects. Association draws on the visitor's previous experiences in order to create personal meaning or context, and/or anchors the object within another context such as a historical or cultural one.[69] This associative approach to leaning is supported by Jean Piaget's theory that "learning is the assimilation of information from experiences."[70] The educational model developed by Winterthur in response to these findings encouraged the visitors to expand their use of categories they used less by engaging them through the category (or categories) they most identified with the most.[71] While the Winterthur study pointed out problems that exist with projecting the actual process of reading onto experiences with objects, it did find newer ways in which literacy skills were built through contextual understanding that relate to how visitors are believed to learn from objects.[72] How can the project respond to the viewers' process of contextualization as an entry-point to other information and skills?

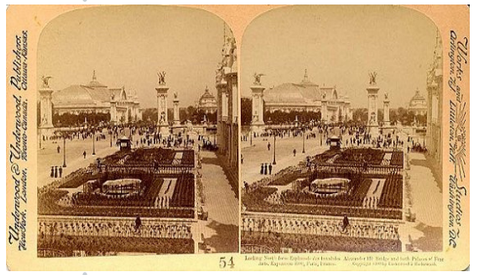
Right:
Holmes Sterepscope
by Valentine
Blanchard, circa 1900
Far Right:
Underwood &
Underwod Stereograph
image, circa 1900
Library of Congress
Collection

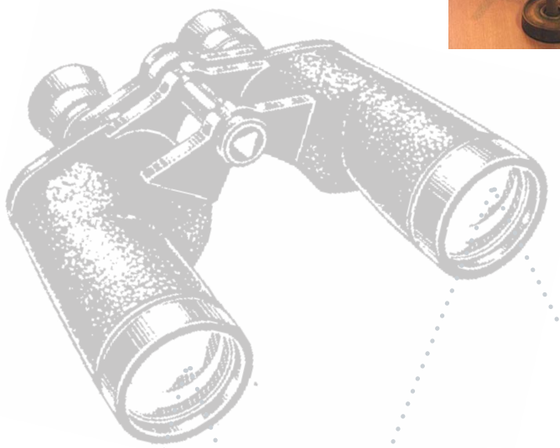
69. Eversman, et al: 151.

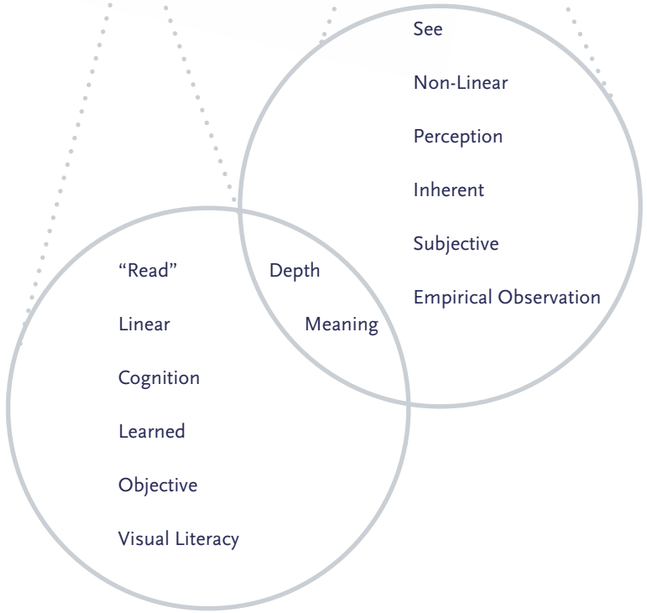
70. Eversman, et al: 153

71. Eversman, et al: 164.

72. For information about Whole Language theory see Eversman, et al: 155–156.







Binocular Vision as a Metaphor for Visitors' Abilities to Learn from Objects

The project will consider that the visitor has multiple ways to learn from objects, including the two distinct abilities—to see and to "read." People have two eyes, or binocular vision, that allows them to see two slightly different views of the world before them simultaneously. These two visions, from separate points of origin combine in order to create the properties of depth and space in our visual perception. Likewise, visitors could be said to have the ability to both see and "read" objects simultaneously in order to create depth in their understanding and perceptions of an object. They also have the ability to assimilate multiple interpretations, or points or view, including balancing their own personal contexts with those created by the museum.

An exploration of project components, museum case studies, and the introduction of the MuseoMap experience

PROJECT

Project Goals
1. Re-envision information access in museums, particularly the interface between visitors and objects in order to increase the accessibility of learning experiences with objects

2.Create an opportunity for the target audience to have an autonomous experience that is directed by personal interests and inquiry

3. Expand the audience's experience with objects by giving visitors tools to recontextualize objects found in individual displays/exhibits within the museum intended to communicate specific messages, and beyond the museum where they may have multiple other meanings.

Objectives
1. Engage the audience with new entry-points to museum content through the dynamic reorganization and contextualization of information from many points of view.

2. Promote active viewer/ object relationships to enable the creation of personal connections and memory

3. Change perceptions about what the museum has to offer by involving audiences in defining its uses and position within society.

Author's Note

> Design is fundamentally a process of supporting the negotiation whereby past social practice is transformed to meet current and future traditions.
>
> **John Seely Brown & Paul Duguid**

The more I work on this project the more information design oriented it has become. As I reflect, the more I have learned about exhibits, the more I tend to look at them as information design problems. The new book *What is Exhibition Design*? defines exhibit design as any endeavor "that applies graphic information to place and object." I found this definition of the medium/process to ring more true to me than any description I had heard before. This project has forced me to consider what role I think museums should play in contemporary society, and I continue to define it as something like the visual version of a library. As institutions that already have so much in common with museums, I continue to wonder what hints museums can take from the accessibility and services provided by their more *textual* counterparts.

That being said, I should tell you that I love museums and exhibitions the way they are. I think the rich history and advancement of knowledge via object preservation, curatorial interpretation, and exhibition will ensure the future of the museum as an institution indefinitely. However, I think that the museums have a responsibility to evolve to remain relevant and accessible. As an exhibit designer, I tend to look and speak critically about exhibitions, but from a standpoint of a visitor in the target age I can find more positive things about exhibit experiences and practices than I can negative.

I mentioned before that I had originally gone about this project backwards, attempting to provide a solution and then research to justify the means. At issue was my bewilderment with why interactive technologies had not been embraced within object-centered exhibitions. Namely, art exhibits. I was well aware of the very logical argument that these exhibits were to be about the objects, and that additional interpretation and interactives only served to divert the viewers' gaze and attention away from the aesthetic experience. Yet, ever since I began to study art history, I became aware of the need for additional interpretation for novice object viewers. While in my heart I can argue for tried and true aesthetic presentation of art in austere galleries, my mind continuously battles with how it is that museums expect visitors to experience or learn. We wouldn't expect to read without first being taught the symbols of the alphabet, or rules of a language? Why would we expect people make sense of/read an object without knowing the conventions of visual language and image making? Would we ever expect to someone in a library to find a book that interests them or to gather information they needed, who hasn't been taught how the books are ordered, and how to use a card catalog? Then why would we expect someone to find and make meaning in a museum without training? On the other hand, how can unexpected things of interest that the viewers happens upon while wandering in a library or museum like setting be used as an entry-point to launch further investigation or inquiry?

My issue, therefore, lies not with exhibits of objects that lack interpretive and interactive components, but rather with the assumption that viewers can access the rich information that is already present, and that they are currently inspired to seek available information beyond what is immediately present. There remains the question of how can access to information be democratized without destroying the aesthetic experience and the carefully crafted messages of fabulous exhibits. However, I think it is a more pressing responsibility of the museums to create entry-points for multiple audiences to the objects and information they protect. I don't believe the answer is in revolutionizing what exhibits are, or cramming them with more information. Exhibits work as experiences with their own discreet missions and messages. I think potential exists in reconsidering the larger museum experience as open-ended, without specific outcomes, while supporting personally defined goals, inquiry, and meaning making. This support includes teaching novice viewers how to access information in museums, from objects directly and curatorial language/interpretation, and creating an interface that allows the information to be organized (framework or structure) and searchable.

User Tracking

Developed primarily as a tool for web usability testing, the data collected by tracking software has been repurposed in order to benefit both creators and users in new ways. Simply by interacting with an interface (i.e. a web site or internet browser), users generate data about their behavior and preferences. The data can be analyzed in order to learn about who is doing what, how, when, and where, creating an integrated market research program. The same data can then be used by the creator to customize the user's experience by giving them what they want, how, when, and where they want it. The target audience understands that user tracking is a part of their virtual and technologically mediated experiences and does not see it as an invasion of their privacy. Although, a notification about tracking and how the gathered information would be used should be included in the process of creating a user profile. Common uses of user tracking in the commercial realm are targeting advertisements and providing recommendations via rating systems.

An example of user tracking by a museum is the Amsterdam Rijksmuseum's use of a pre-visit survey on their web site where visitors rate objects to determine the users' interests, which in turn generates a personalized tour in preparation of the user's visit. The objects are recommended in three ways: 1) users who rated this object highly like you did also rated these highly, 2) this object rated highly by you has a similar description to this object, or 3) these objects have descriptor/s (words that describe physical features, geographic locations, themes, etc.), you rated highly.[1] The problem with the latter two means of recommendation is that the descriptions and descriptors that are searched to provide the recommendations are the museum's language from the collections management database and not necessarily meaningful to non-expert audiences. The recommendations would likely be more useful to users with the diverse backgrounds if the language was determined by the users. Two really great things from this case that could be implemented in this project are that users at any time can "manipulate and correct the ratings" if they see that the program is getting the wrong idea about their preferences, and users can see the logic behind any recommendations given by clicking a "why" button.[2] Both of these options make transparent the interface and programming, and can promote reciprocal learning amongst visitors when their recommendations create a bridge to new objects or ideas for other users.

This project also will make use of user tracking in multiple ways. It will be used to generate recommendations that will encourage discovery of objects of interest to the users based on their and other users' completed search queries and interactions. It also will include recommendations for objects at other institutions, marketing other museum experiences. In addition, it will provide a means of conducting integrated market research. Users will create a user-profile during their first login that will ask basic demographic and interest questions (although they can be skipped). The museum then will be able to define audience groups based on demographic profiles and study their experiences, or define usage groups based on experience and study their demographics. User recommendations then can be filtered through data collected from user group/s to which they belong. Museum evaluators also may be able to use the data to understand what visitors are learning and learning from based on analyzing user-generated content in relation to the visitor's experience tracked by the device. The utilization of user tracking to actually present visitors with a map that documents their path or experience in the museum is the most unique implementation of the technology in this project. Since user tracking is generally invisible or unknown to the user, this project will flip it on its head making tracking a conscious activity, and manipulating maps a task for the user (the unaltered data from tracking the actual experience will always be saved for reference and comparison).

1. L. Aroyo, et al., "Personalized Museum Experience: The Rijksmuseum Use Case," *Museums and the Web 2007: Proceedings.* 31 Mar 2007. Archives & Museum Informatics. 6 Mar 2008. <http://www.archimuse.com/mw2007/papers/aroyo/aroyo.html>.

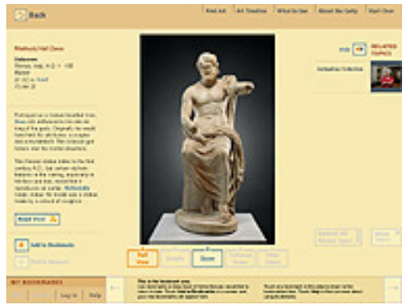
2. Aroyo, et al.: "Personalized Museum Experience."

Bookmarking

Bookmarking allows internet links to various content to be stored by a user for later retrieval from the same or a secondary interface. Similar to bookmarking a favorite web site in an internet browser, museums have created web sites, exhibit kiosks, and wireless handheld devices that allow visitors to save links to be accessed later from a personal web page hosted by the museum, or by enabling them to send the links to their personal e-mail addresses. The primary goal of bookmarking is to prolong the museum experience beyond an individual visit. Early adopters, like the Metropolitan Museum of Art's *My Met Museum*, and the Virtual Museums of Canada's *My Personal Museum*, allow users to bookmark favorite artworks in virtual collections to create personal galleries to share with friends or family.

The idea was that a virtual community could be created through the sharing of bookmarks.[3] Bookmarking programs grew in complexity and features; for instance users were given the ability to annotate their bookmarked collections, and on the Getty and Tate web sites, users could print a map of their collections to create personal tours.[4]

A study by Silvia Filippini-Fantoni and Jonathan Bowen showed that the majority of these bookmarking programs were not particularly successful. The least successful programs were those that took place online only, resulting in statistically insignificant usage reports. The introduction of bookmarking kiosks improved bookmarking usage. The GettyGuide kiosks that allow visitors to look at additional information about objects while they are in the museum with the option to send it to an e-mail address or personal web page, resulted in an average of 6% of kiosk users bookmarking per month in 2005. Unfortunately, less than 2.6% of kiosk users in any given month accessed the information they bookmarked. The most successful bookmarking programs included the use of handheld or mobile technology. The Tate Modern in London developed a *Multimedia Tour* with Antenna Audio that allowed visitors to access audio-visual clips about a work by entering its identification number found on the wall into a PDA. The system also allowed for visitors to bookmark links to additional information and e-mail them home. 43% of visitors who used the handheld tour bookmarked information. 19% of those who bookmarked accessed the saved information and clicked through 44% of the information saved. At the Tech Museum of Innovation in San Jose, visitors are given RFID-tagged tickets to wear as bracelets that allow them to bookmark additional information with little effort by scanning their bracelet on small readers throughout the exhibits. After the visit, users who bookmarked could see what they saved by entering the number on their bracelet into a web page on the museum's web site. 40% of their bracelet users bookmarked information; 17.25% of which later accessed their saved information, although only clicking through 7% of the information saved. The study, which includes data from multiple other bookmarking projects with varying success rates also showed that users were more likely to access their bookmarked information if the user sends an e-mail to oneself, rather than the user having to navigate to a museum web site or program page to retrieve their information.[5]



Bottom Left:
Screenshot from
My Met Museum at
https://www.
metmuseum.org/
mymetmuseum/
Left:
Screenshot from
GettyGuide Kiosk

3.. Filippini-Fantoni and J. Bowen, "Bookmarking In Museums: Extending The Museum Experience Beyond the Visit?" Museums and the Web 2007: Proceedings. 31 Mar 2007. Archives & Museum Informatics. 6 Mar 2008. <http://www.archimuse.com/mw2007/papers/filippini-fantoni/filippini-fantoni.html>.

4. Filippini-Fantoni and J. Bowen: "Bookmarking In Museums."

5. Filippini-Fantoni and J. Bowen: "Bookmarking In Museums."

6. Filippini-Fantoni and J. Bowen: "Bookmarking In Museums."

One of the motivations for adopting bookmarking technology in object-centered exhibition was that it "allows the visitor the possibility of focusing more on the discovery and the aesthetic experience while in the museum and to leave the more traditional didactic aspects for later."[6] This logic seems flawed because it separates or disconnects "discovery" and "aesthetic experiences" with the objects from learning, and positions the bookmarked information as dull, rather than as exciting extensions of the discovery experience. This project will try to create a reciprocal process where engagement with objects provokes the need for more information, and the information will encourage engagement with more objects. However, this project will maintain the goals to prolong visitor experience beyond the museum walls and create communities of users. It also will take into consideration that the highest bookmarking rates occurred when visitors had to make little effort and were in close proximity to the objects with handheld devices, rather than having to bookmark from remote kiosks or interfaces that were distant from the objects/exhibits; and also that using personal e-mail resulted in the highest retrieval rate of bookmarked information.

Open Source Yields Open Content

Open source originally referred to the free sharing of source code to be used by anyone to program computer software. The spirit of the open source quickly spread to inform the creation of many other communities besides computer programmers, in order to create and share sources of all sorts, for everything from the design of materials and goods to processes for manufacturing and distribution. Anyone can use the sources for free in total, in part, or conditionally, For instance, users may be required to credit the originator. More recently, *shared* source requires the payment of (generally reasonable) royalty fees. The open source idea has continued to evolve, just as the ideas shared via open source practices do, and has spawned *open content*, or the similar communal creation and sharing of information. Wikipedia is probably the most recognizable instance of an open content community. The *open* movements run parallel with the paradigm described by Lawrence Lessig's "read/write culture",[7] and the prominence of the do-it-yourself attitude in contemporary society.

This project explores the potential for sharing content amongst museums, as well as sharing the responsibility for the creation of content amongst museums and their visitors. The social aspect of museum visiting can be supported in the virtual realm by enabling the creation of information sharing communities, and in the museum with wireless devices that allow visitors to share information with others if they came in a group.

7. Lawrence Lessig, "How Creativity is Being Strangled by the Law," *TED.com*, Mar 2007. 18 Nov 2007. <http://www.ted.com/talks/view/id/187>.

Tagging

Labeling is ingrained in museum culture. Labels "give order and meaning to collections" by classifying, identifying, and interpreting. "They are iconic of what a museum is, and a symbol of what museums should strive not to be."[8] Tagging offers a new model for envisioning labeling as a more dynamic and inclusive practice, which will ensure that the tradition is upheld in a relevant manner. Tagging is the process of labeling information with metadata, or information that describes the primary information so that it can be found when a search is performed using the descriptor/s. Tags are at times called keywords. Tagging lets users decide what is relevant about the information, and what the information's overall relevance is to their experience, as well as recognizes that what is relevant is ever-changing. Tagging appeals to museums because it represents a dialogue between the viewer and the object, and between the viewer and the museum.[9] It appeals to visitors because interjecting one's language into a space (visually or verbally) can identify and establish ownership of the space, thereby making the museum experience more personalized.[10]

"The solution to an overabundance of information is more information."[11] Traditional hierarchical information structures place the user in a passive position, following the given order of a book or chronological exhibit for example. Comparatively, tagging creates a temporal, immaterial, and non-hierarchical information structure. It builds a user-specific efficiency, allowing individuals to retrieve things they saw using their own language, and motivates users to reorganize information as they use it, which in the end helps to create memory. Tagging also promotes the existence of many simultaneous orders, which can support the multiple interpretative lenses used for different types of objects across many types of museums, disciplines, and individual experiences. Controlled vocabularies, or standardized descriptors and categories, used by libraries, most museums, and museum collaborations like the Getty Art and Architecture Thesaurus describe their collections so that there is only one order, and that each object is in one place.[12] Tagging allows one object to be in many places, supporting serendipitous discovery and connections where multiple orders may overlap happily, but accidentally, resulting in the creation of new entry-points to information that might possibly be unimaginable within conventional museum information structures and vocabularies. "Serendipity is a key factor in advancing knowledge. When a visitor to a museum or library browses along shelves or showcases, serendipity plays a considerable role in the 'user-experience.'"[13]

Tagging illuminates how information is ordered and used based on particular points of view. Users of information can be hindered or alienated by its order, or can feel aided by it, and as a result feel a sense of identification with the order's creator, whether that is other users or the museum, if it empathizes with the user's point of view and purpose. Users applying similar tags to information create a shared community order that enables them to learn from one another. For instance, objects tagged with jargon from certain groups like collectors, can allow other collectors to find the objects. Applying Lessig's idea of the "read/write culture," tagging allows the masses to build the organization of information from the bottom-up, rather than a few organizers at the top imposing categories that only make sense to them.[14] The patterns of associations and language used by taggers to describe information are likened to a "publicly editable thesaurus" and are called folksonomies.[15] "Folksonomies reveal how the public is making sense of things, not just how expert cataloguers think we ought to be thinking."[16] User-generated tags "are generally descriptive, allowing for users to discover objects that are difficult to discover through the museum's formal classification systems."[17] In the context of museums, folksonomies have been called "dynamic community-created classifications systems."[28]

8. R. Parry, et al. "How Shall We Label Our Exhibit Today? Applying the Principles of On-Line Publishing to an On-Site Exhibition." *Museums and the Web 2007: Proceedings.* 31 Mar 2007. Archives & Museum Informatics. 8 Mar 2008. <http://www.archimuse.com/mw2007/papers/parry/parry.html>.

9. B. Wyman, et al. "Steve.museum: An Ongoing Experiment in Social Tagging, Folksonomy, and Museums?" *Museums and the Web 2006: Proceedings.* 1 Mar 2006. Archives & Museum Informatics. 8 Mar 2008. <http://www.archimuse.com/mw2006/papers/ wyman/wyman.html>.

10. Teal Triggs. "Gender, Language, and the Spatial Landscape." *Zed: Design + Morality.* Vol. 3 (1996): 30.

11. David Weinberger, *Everything is Miscellaneous: The Power of the New Digital Disorder.* (New York: Times Books, 2007): 13.

12. Weinberger: 89–97.

13. S. Chan, "Tagging and Searching – Serendipity and museum collection databases," *Museums and the Web 2007: Proceedings.* 31 Mar 2007. Archives & Museum Informatics. 8 Mar 2008. <http://www.archimuse.com/mw2007/papers/chan/chan.html>.

14. Lessig: "How Creativity is Being Strangled by the Law."

15. Chan: "Tagging and Searching."

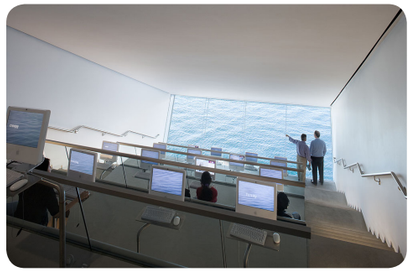
16. Weinberger: 56–63.

17. Chan: "Tagging and Searching."

28. Chan: "Tagging and Searching."

The creation of user- or user-group- generated information structures offers a new level of active engagement in not only the accessibility of information, but also its construction, and resulting experiences with the information. The introduction of one user's or community's point of view on information to another can create a need to reconsider initial interpretations and re-order previous knowledge. The ability to see multiple points of view, or information parallax, will constantly redraw the boundaries of interpretation making them dynamic and meaningful. Where "the community expresses the rules and concepts of the interpretation, it implies value and meaning."[19] There is a movement "to intersect tags with social networks, so that the tags created by people we know and respect have more "weight."[20] This can be seen in tagging communities like del.icio.us, flickr, and technorati. This project, using demographics from user profiles, and data from tracking software could connect people with people seeking similar experiences, and other people using similar language to tag, but will not make this connection exclusively, as it also hopes that visitors might discover the relevance of another visitors' dissimilar points of view.

Several museums and museum collaboratives have experimented with the possible uses and effects of tagging, most notably the Steve Museum Tagger project that began in 2006 with eight cooperating art museums, and partial funding from the Institute of Museum and Library Services. The project set out to determine if "social tagging can enhance access to museum collections by adding useful terms to existing museum documentation."[21] Online at Steve Tagger, http://tagger.steve.museum/, users can choose a set of objects to tag from thumbnails of random objects. Users then click through their set of objects one at a time where they are able to see a basic museum-generated description of the work and a list of popular tags associated with it before contributing their own tags to the site. The user tags are unprompted, which is helpful in learning what the user has to say, rather than asking what the museum wants to hear about. This project will combine the opportunity for users to submit unsolicited tags based on whatever the user is seeing or thinking like Steve Tagger, but will also make use of prompts which will gather tags generated in relation to a given context. This will allow for the creation of two parallel tag collections, one that is based solely on the visitors' language, and one that is rooted in the museum's language in order to support the order of information from multiple points of view. The problem with Steve Tagger is that while the user gets to choose the set of images they tag (meaning they are of interest to the user), they are, in fact, images of the objects reproduced online,



The Poss Family Mediatheque at the ICA Boston by Diller Scofidio + Renfro Architects
Photo: © Iwan Baan

meaning they appear different to every user, and that the users' experience with it is disconnected from the direct experience of the actual object.

The Powerhouse Museum in Sydney, Australia has implemented a similar online tagging system with the goal of expanding access to their online research collections, which seems more practical given the purely online tagging experience. The Powerhouse also has built in to their system the ability for users to edit other users' tags by changing spelling or even deleting them, which helps to minimize the amount of museum resources needed to edit inappropriate tags.[22] If the thesis project were to be implemented, it would need to be determined who would administrate the editing user-generated content, and the utilization of peer editing and/or a system that would automatically deleted tags if they were not seconded within a certain amount of time might be considered.

A related program at the Institute of Contemporary Art, Boston is encouraging visitors to tag artworks during their museum experience while browsing additional and multimedia in the Mediatheque.[23] Although the Mediatheque is a unique space separate from the galleries, there is a high probability that the visitors may have actually seen the works they are tagging firsthand, unlike users of online tagging engines. If the effectiveness of these tagging programs follows the pattern of the bookmarking study, the onsite activity encouraged by the Mediatheque would more effectively engage visitors than the online programs, yet this project will seek to make an even more direct connection between visitors and the objects they tag by using a mobile handheld device.

19. Scott Townsend: "Unfolding the Surface of Information." *Design Issues* (1998): 13.

20. Weinberger: 129–131.

21. Steve: The Museum Social Tagging Project. 20 Mar 2008. <http://steve.museum/>.

22. Chan: "Tagging and Searching."

23. Institute of Contemporary Art/Boston. "Poss Family Mediatheque," ICAboston.org. 2 Feb 2008. <http://www.icaboston.org/gofurther/ica-mediatheque/>.

RFID in Museums

Radio Frequency Identification technology has transformed daily interactions with products and services in the commercial realm for well over a decade, but as of late, it has quickly seeped into use at museums—as the technology has been improved and its cost has become very reasonable. Besides the bookmarking system at The Tech Museum of Innovation that employed RFID-tagged tickets that could be worn as bracelets, the Exploratorium created eXspots that allowed visitors with RFID-tagged cards to "generate post-museum content for the user to further their education." It was also imagined as a "visitor remembering system" that, in addition to saving bookmarks, allowed users to upload to their personal page on the museum's web site data, such as results of their experiments and pictures from certain interactive exhibit components.[24] The idea of the "visitor remembering system" is quite potent in terms of the project envisioned. Capturing the users' interactions with exhibit components seems very effective in comparison to a museum-generated bookmark.

In 2001, The Museum of Science and Industry in Chicago with NearLife, a virtual technology company, launched the *NetWorld* exhibition that invited visitors to buy a NetPass, an RFID-tagged card, which enabled them to place their personally designed virtual avatar (think Second Life) inside the internet exhibit to interact with creator and guide them through the exhibit.[25] This application is interesting both in its nature to act as personal tour guide and, also, given its relation to the recent explosion of virtual avatars in massive online social networks and gaming communities. It is unclear at this time whether this extreme example of user profile creation could inform this project, but is undoubtedly interesting in terms of the way in which it encourages socially reciprocal interaction during the museum visit—although oddly with the oneself. If nothing else, it speaks to the capability for RFID to enable visitors to customize their museum experiences, and likewise control their own virtual footprint.

The Museum of Natural History, in Aarhus, Denmark started the TaggedX program which tagged bird specimens in its *Flying* exhibit allowing users with a PDA device with RFID-reading technology to access information that was wirelessly sent to the device upon scanning the object's tag. Additionally, the user could choose between three types of information including encyclopedic knowledge, several unique thematic offerings, and a game mode that sent the user clues and prompted them to search for and scan the object matching the description.[26] A similar program at The National Museum of Western Art in Tokyo gave visitors access to a database with information about artworks using Bluetooth transmission rather than a wireless internet connection. While there was no data found at this time about the effectiveness or usage of RFID programs that allowed visitors to access information about objects, it is likely data will be available shortly, which can inform this project's implementation of RFID in a similar manner.

In late 2005, the Cleveland Museum of Art used RFID-tags to track visitors' movement through their museum to better understand how their exhibits and spaces were being used. By blanketing the museum with a grid of wireless sensors, the location and time spent in each location of users holding RFID tags can be recorded. They tracked both individual visitors and visitor groups in order to learn about how this variable changed the pattern of movement and/or exhibit usage.[27] This evaluative or researched-based use of RFID begins to show the multi-tasking capabilities of the technology, as programs that engage visitors in scanning objects to get information could also track visitor movement simultaneously. This project will attempt to exploit the multi-tasking potential of RFID tagging in order to create a seamless experience for visitors and museum professionals. For instance, besides supporting exhibits, RFID technology has been successfully implemented to assist with collections management. The National Museum of Malaysia RFID-tagged a million artifacts, as well as their storage spaces in order to improve efficiency and security of object inventory, collections rotation, and particularly for preparing and shipping loaned artifacts.[28] This use of RFID is quickly being adopted, and although initially intended for behind-the-scenes use, once installed it can be adapted to support visitor experiences as well.

24. Sherry Hsi, et al. *eXspot: A Wireless RFID Transceiver for Recording and Extending Museum Visits.* 2004. 8 Mar 2008. <http://ubicomp.org/ubicomp2004/adjunct/demos/hsi.pdf>.

25. "RFID takes Chicago museum visitors inside the Internet." *SecuritySolutions.com.* 1 May 2001. 21 Mar 2008. <http://securitysolutions.com/mag/security_rfid_takes_chicago/>.

26. Farhat Khan, "Museum Puts Tags on Stuffed Birds," *RFID Journal.* 7 Sep. 2004. 20 Mar 2008. <http://www.rfidjournal.com/article/articleview/1110/1/1/>.

27. Anita Campbell, "RFID in Museums - Another Growing Market," *RFID Weblog.* 22 Aug 2005. 14 Mar 2008. http://www.rfid-<weblog.com/50226711/rfid_in_museums_another_growing_market.php>.

28. Rhea Wessel, "RFID Helps Malaysian Museums Track Artifacts," *RFID Journal.* 22 Jun 2007. 18 Mar 2008. <http://www.rfidjournal.com/article/articleview/3435/1/1/>.

MuseoMap Interface Concept

It is through interaction with products that customers, in the commercial world, are believed to build relationships, grow loyalty, and determine value. While most people would agree that the museums are valuable cultural resources, a personal interface can go a long way to help the visitor create a sense of ownership of their experiences and learning process, humanize the vast scale, and thereby foster a personal connection. It is the goal of user interface to support personal experiences with museum objects and individual exploration of contextual information to aid the visitors' meaning making. In order to meet the needs of many individuals, the interface will offer a lot of options that may be used or not depending on the users' preferences.

MuseoMap will allow visitors to navigate the museum experience on their own terms, encouraging them to follow their own path, methodology, and connections with objects based on previous knowledge and associations, rather than relying on the connections the museum interpretation hopes to deliver using traditional information structures, like taxonomies. MuseoMap will assist visitors in finding objects of interest or ones that they can relate to through recommendations based on their tracked interactions and data from other users' interactions. It also will make additional contextual information about objects accessible on demand by linking to an internet database, combined from all participating museums, which is indexically searchable. By encouraging visitors to pursue their own interests, the idea is to make use of what they already know, or can see, in order to make new connections to the unknown, unseen, or invisible. Like searches performed through internet search engines to seek desired information, searching this database (based on museum- and user-generated language) will have no predetermined end or specific answers, rather the result is an accumulation of knowledge from many points of view that the user must navigate and synthesize to determine what is meaningful. In addition, these searches have endless opportunities for new beginnings, as paths to desired information lead to many peripheral or tangential findings that the user may choose to pursue.

A primary objective of this project is to engage visitors in an active process of seeing and devising connections and distinctions between objects and their various contextual environments. As users scan RFID-tagged objects of interest with a handheld device, the device will both give a museum-generated descriptions pointing out profound details (through written directions, small animations which zoom or point to details, or even audio if users have headphones or bluetooth headsets) that are intended to increase the users' knowledge of historical context and improve their visual literacy skills. The device will also provide tools for visitors to generate personal commentary and browse others' feedback in order to create dialogue based on the users' own seeing and thinking. Users can generate multiple tags for objects using words to reply to museum-generated prompts, which will associate tags with a category such-matter as subject or technique, as well as use words or symbols to respond to objects based on personal reactions, again changing the interpretation lens or point of view. Visitors also will be able to mark-up (with simple drawings and text) photos of objects and exhibits taken with an integrated camera. Since museums are unable to constantly change exhibits, the user-generated content accessible through the interface can support dialogue between museums and visitors about any object in multiple contexts beyond those discussed in the current exhibits, which may be reflective of visitors' interests.

Finally, MuseoMap creates a map of the visitors' experiences as they move through the museum scanning or "collecting" objects for investigation. Visitors then are encouraged to manipulate the physical map by creating multiple reorganizations of the objects they collected to show relationships between them. The users' new orders can be based on any

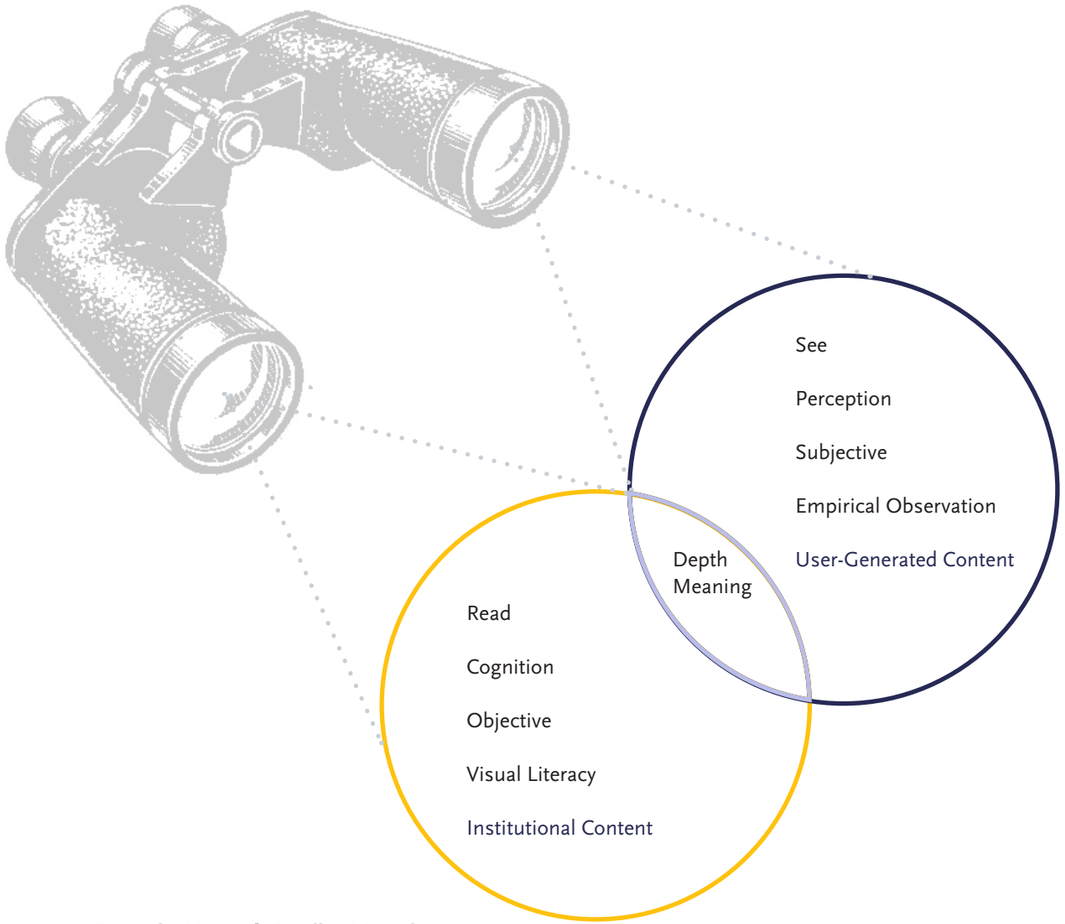
Design & the Elastic Mind

The tagging of information in our environment makes the world into a live information platform. New interfaces incorporate instinctive human traits, expanding our relationships with the objects they enable us to access.[29]

29. "Design and the Elastic Mind," *MoMA.org*. Feb 2004. Museum of Modern Art. 28 Mar 2008. <http://www.moma.org/exhibitions/2008/elasticmind/>.

logic they see fit, for instance, subject matter, color, or a narrative, which can express their personal perceptions of and connections with the objects with which they interact. Users' can toggle between maps, to see the information they gathered from multiple points of view, exploring where various contexts, such as personal, physical, conceptual overlap. The mapping process is encouraged to be fluid and continuous, changing with the users' discoveries and learning, which is likely to occur over time, not with just one museum experience. Therefore, this project will support continuity of the learning experience across many museum visits by recommending other objects or experiences to seek, as well as the continuity between learning from objects in museums and daily interactions with objects. The user will be able to access the database anytime and continue updating maps and other user-generated content saved to their profile on a personal page at the MuseoMap web site. The design of the web page will remain as consistent to the handheld interface as possible. They also will receive notifications when new objects related to their interests have been put on display at the museum encouraging repeat visits.

The MuseoMap database and experience will become more potent as users contribute and museums sign on to collaborate. The project has the potential to create ever-evolving and dynamic museum experiences based on user input and interaction. It has the capacity to transform object-centered exhibits into object-locus exhibit, where object interpretation is directed outward to meet the visitor, rather than directed inward at the object.



Binocular Vision & Parallax Metaphors
The user-interface will reflect the this diagram created to describe how visitors access information from objects. The interface will continue to promote the user's parallel construction of personal meaning and understanding and significance of multiple other contexts.

Technology
The hardware and software to implement this project is already available in many forms. Many smart phones and PDAs already possess the capacity to support this experience with the addition of a small RFID transceiver that could be provided at the museum. These devices are not yet ubiquitous, but may be very soon enabling the visitor to supply the hardware, and the museum the software. In the meantime, the museum could test the project using an ideal hardware set up. The primary user-interface, the handheld device, will be controlled through a multiple touch-and-gesture-sensitive screen. It would have an integrated RFID transceiver, wireless internet, digital camera, and an audio jack.

The project would employ two types of RFID tags. Active tags that have batteries to project signals into space will be used to locate the user within the museum site—showing the user their whereabouts in relation to objects in the physical space. Passive RFID tags, which can be specified based on the distance from which an RFID reader can read them, will be used to label objects and be programmed with a basic identification and description of the object (which Is useful for collections management). The user then can scan (ideally from about 12” away for safety) these tags with the handheld device to learn more about the objects and add them to their maps. Additional information about objects from the database would be downloaded to the device through the wireless internet connection, which would also support the uploading of user-generated content to the database (If they choose to share), and their personal web page.

RFID Tags
Tags are small (usually less than 2" square), readily available, and relatively inexpensive (average 25 cents each)

Programmable passive tags are available on large rolls. They can be specified based on the amount of memory and distance from which they can be read.

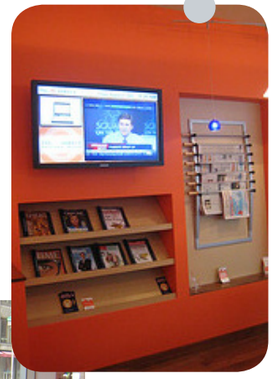
Active tags which contain batteries to transmit their information are slightly more expensive.

Motion Computing
Motion computing has customized it proprietary tablet PC for the health care industry and construction contracting, and it could easily be adapted for the purposes of MuseoMap. It has a 10.4 inch display, which makes it much larger than any smart phone or PDA although they could work as well. It also comes with the built-in RFID technology, camera, Wi-Fi, Bluetooth, and a harddrive, which might be replaced with flash memory in order to reduce its 3 lbs weight.

Potential for User-Supplied Hardware
Many phones and PDAs are being manufactured with RFID read, or read/write capacity. Alternatively, external RFID devices could be provided by the museum. In Korea you can order your Hamburger by RFID at McDonald’s.

Conceptual User-Experience

Getting Ready
When visitors enter the museum they can buy tickets and create a user profile, which requires entry of an e-mail address and basic demographic and interest information (users can choose to proceed as an anonymous user, but their information will not be saved) in the Compass Café. This can be accomplished at individual touch screen table kiosks, at something resembling the Apple "genius bar," or could even happen on the museum's web site before a visit. Visitors can borrow a handheld device, or install software if they have brought their own device. They will have the option to watch a short video tutorial about how the MuseoMap interface functions (there will also be a help guide built into the software) and can ask the staff questions. The Compass Café will be a lively environment with activities and mini-exhibits that focus on increasing the users' "visual literacy." It also will be a place where visitors can return to rest and grab a snack or drink, as well as share content with visitors in their group.



ING Direct Café
lively atmosphere
provides incentive for doing business
makes running an errand entertaining
  changes the behavior and perception of the task
information hub (work or leisure)

Compass Café Inspiration

Microsoft Surface touch tables
read peripheral media via wireless, bluetooth, RFID, etc.

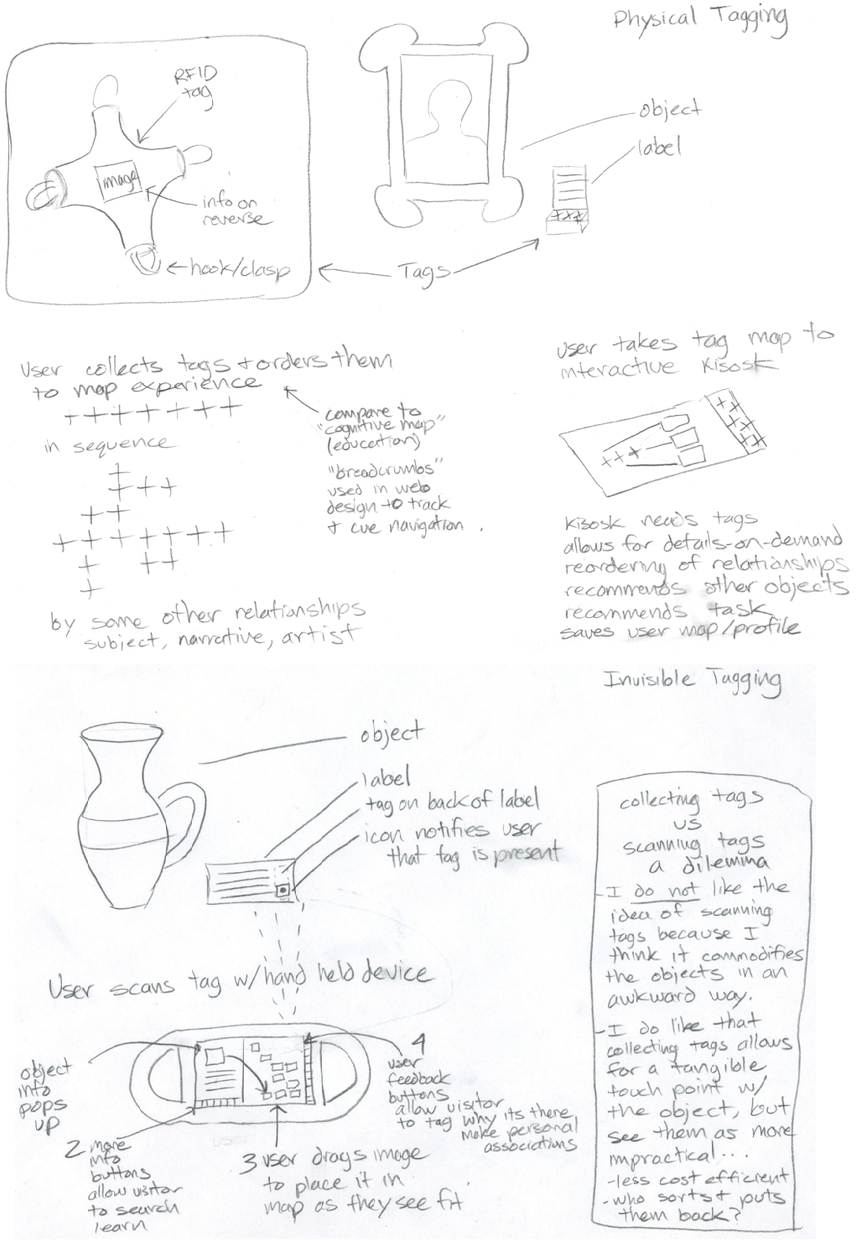
Apple Store
experience / atmosphere appeals to target audience
people stay and play
genius bar provides user-friendly service
tutorial theaters interesting way to orient people to service
products positioned as catering to individual needs
both service and products are highly designed

iPhone is the next platform for cell-phone, and pod/vod cast tours & programs

On the Move
MuseoMap uses passive radio-frequency identification (RFID) tags to mark objects with their tombstone information and a museum-generated description (a program could be written to mine existing collections databases like The Museum System to minimize work of tagging the objects). It also uses active RFID tags to send signals to the device that shows the user's position on a map of the museum. As visitors "wander" through the museum in pursuit of their own interest, they can scan tags to "collect" objects that catch their attention. The collecting process allows users to map their journey, and capturing a record of their museum experiences that is linked and stored via their user profile.

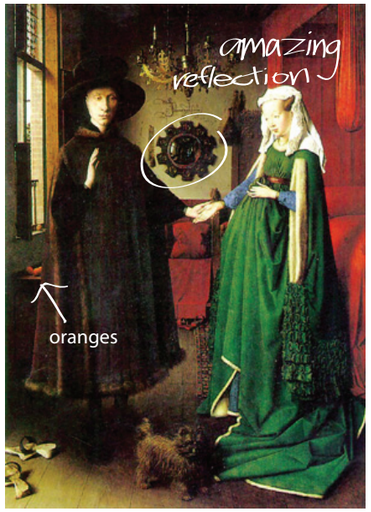
RFID Technology Inspiration

Prada Sales System
Products are tagged and sales associates have scanners like the Motorola Sparrow that can immediately access available inventory/size availability, etc. Products placed in the interactive dressing room by a customer trigger a personalized fashion show with chosen products appears on a flat screen. It also suggests other products to mix and match with the items chosen to plan a wardrobe.



Process Sketches

Right
Example of user-generated object photo with annotations. Arnolfini Wedding by Jan van Eyck



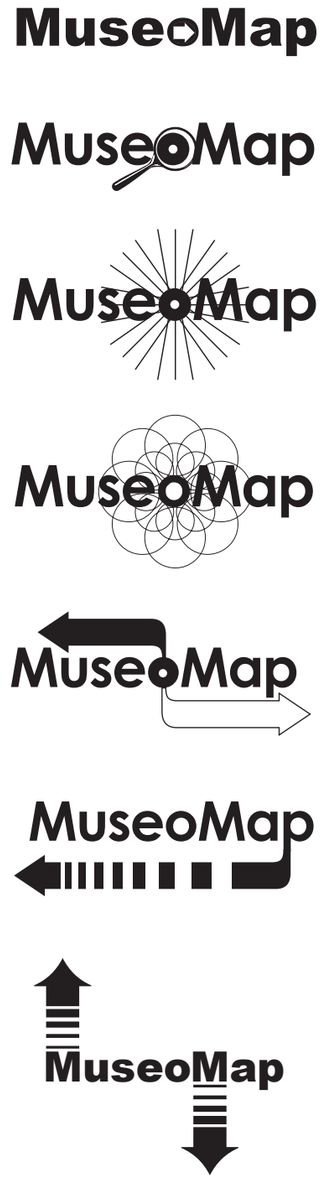
In the Galleries
As visitors begin to establish a map, they can start to experiment with the interface that allows them to gather additional information about what they have collected. This could be looking into details of interest, or looking for explanations for what they do not understand. As the user adds objects and interacts with the interface, which tracks their usage, the interface will begin to offer suggestions about what objects the user might want to look at, and what to notice about them (visual literacy training), as well as suggest task-based activities that increase observation skills. User tracking can document visitor trends that can be used to aid demographically similar visitors in pursuing their personal quests by providing recommendations, i.e. visitors who collected these objects also collected these objects. The connection between users created by the interface is important when considering that museum-going is often a social activity. The interface is intended not only to allow access to information created by the museum (curators/facts), but also content created by fellow visitors.

Users can begin generating content as soon as they collect an object. There are a variety of ways users can actively respond to or reflect on their experiences with objects, including adding tags or metadata (words) to flag favorites objects, take pictures of the objects notating them with words, symbols, or simple drawings, and most importantly place objects in cognitive maps which show the user's associations between objects and ideas (whether the categories are defined by the user or prompted by the museum). The maps can be constantly reorganized in order to reflect the users understanding and growing collection.

In order to encourage visitors to stay and engage with objects, see in new ways through the MuseoMap interface activities, investigate related information, and participate in the creation information the galleries must become an inviting place to hang out for a while. For instance, comfortable seating rather than benches, which is plush with backs, and can be positioned by (at least swiveled if moveable is too dangerous the gallery) the visitor to view the objects they are investigating would be nice for individual visitors. A seating station that seats four to five people at a counter on stools with backs might be would cater to visitor groups or individuals looking for a more social experience. The counter would face out towards the objects and could feature docking stations for the handhelds that enabled the users to go hands-free for a while and charge up the devices.

Throughout their visit, users can also stop at kiosks throughout the museum that allow the user to upload their user profile, and make changes on a larger touch screen. At the end of their visit, or if they need a break, users can return to the Compass Café grab a drink, and play with their collection of objects and maps that they have created on the touch screen tables. These kiosks can be an opportunity to reflect on the creation process, as well as "trade" objects and metadata with the people with whom they may have come initiating a dialog about different perceptions of the objects and experiences. MuseoMap also will allow museum visitors in groups to quickly share discoveries and any user-generated content with visitors in their personal network via wireless transmission. This can support social learners, and visitors who are looking for a shared creative experience.

The End of the Day and a New Start
Before users close their profile, they will be notified that they can access their profile online, and be referred to other museum objects, exhibits, or events that may interest them based on their tracked interaction with the interface (think amazon.com recommending books based on your previous searches/purchases). These referrals are not only to encourage repeat visits to the museum where the MuseoMap experience originated, but also to other museums of many types that use MuseoMap. Yes! MuseoMap networks collections from many types of institutions allowing visitors to learn where they can continue their journey of personal inquiry. In fact, MuseoMap also networks objects outside of museums, such as public artworks, sculpture gardens, and historic sites or monuments that are marked with the MuseoMap logo to be scanned (as RFID becomes ubiquitous on mobile technologies, until then it could have a code that users could enter on their profile page). This program continues to promote the continuity between experiences with objects inside and outside of museum.



Logo Explorations

Beyond the Museum Visit
The MuseoMap experience extends beyond a single museum visit and the walls of the institution. After visitors leave the museum, they will receive an e-mail that tells them changes have been made to their user profile and provides a direct link to access their profile on the MuseoMap web site. They can manage what essentially becomes their own collection of objects—organizing them in maps by multiple points of view, for instance, personal aesthetic insights or narrative qualities. They can continue to search the MuseoMap database for additional information about the objects they encountered, their makers, media, or historical time period. (This information is linked by both museum- and user-generated metadata).

Users will have the opportunity to continue learning and make discoveries about what they saw; for instance they might realize they collected two totally different paintings, found on opposite sides of the museum, made 150 years apart, yet tell exactly the same story. They can then search for information about the story, and learn that there are 50 other paintings in the MuseoMap system that tell that story. They are able to compare the paintings, see how the story was portrayed by different artists, and during different time periods. (This example is indicative of how the target audience might perform a search on google for a single topic, go to a web site, and then follow links to ten other sites, to a topic that seems hardly related to the original search, but now is now linked by associations and spatial orientation). The program will tell the user where they can go see these other paintings for herself. (Users can only add objects to their collections that you have scanned/collected in person, although they can learn about any object in the database at anytime). This feature is unique in that it to encourages users to continue their journey of learning and meaning making by pointing them to collaborating institutions where they can find objects in which they have expressed interest and may not have known about otherwise. Perhaps the program will send them to an institution with a different discipline that they may not have previously considered. If widely adopted, the MuseoMap program could support and document a lifelong journey of discovery and learning in museums.

The MuseoMap web site also allows users to create tours from their collection maps, and share them or any other user-generated content with friends, family, and/or other MuseoMap users, allowing users to network via common interests and experiences just as they might on content-driven social media sites. MuseoMap also could be added as a third party application to user pages/profiles on other social media sites like Facebook. While the experience is generally intended to allow this audience to have autonomous experiences, it is important to acknowledge that this age group is in fact highly social, and that museum-going is often a social experience shared amongst friends and family. This audiences' idea of socializing includes interactions mediated by technology. In fact, a great deal of their communication with peers is not conducted in person (see p. 28). However, the audience constantly remains in contact—communicating and sharing information through technological media is natural and often preferable. Just as MuseoMap will allow museum visitors in groups to share information and any user-generated content during the visit, the web site allows users to share not only with those in their personal network, but larger communities networked by interests.

Implementation
Presumably MuseoMap would function as a museum support company like Acoustiguide. The company could be responsible for the creation of software and for keeping the hardware current and in good condition. It could harbor the burden of getting databases ready and streamline the RFID tagging processes for collaborating museums. The company also would maintain the MuseoMap web site and output reports tracking usage trends. It could even be in charge of operating and staffing the Compass Café (much like restaurants inside museums are often operated by catering companies).

Once the type of hardware that supports the MuseoMap experience becomes ubiquitous, and the museums would not be required to maintain so such hardware, this project might also function well as an open source initiative. Collaborating museums, acting as a consortium, could then share the responsibility and resources, which would primarily consist of software and database development and management.

Ideally the project would be piloted in a city like Philadelphia, which offers a great diversity of museum experiences, public art, and historic attractions. Early adapters would likely be institutions with large object collections on view, such as art museums and anthropology/cultural history museums. After the kinks are worked out in two or three prototype institutions, additional institutions in the pilot city and beyond, having seen how the program works, could begin participating and making the project more unique, rich and powerful. It would make sense for the project to begin during a city-wide celebration like the Ben Franklin Tercentenary. Adoption in additional cities might be supported with sets of interdisciplinary travelling exhibitions that could introduce the MuseoMap program to new users.

users can scan objects to learn more and choose to collect them or not

users can create and toggle between 8 maps during a single visit, users assign their own logic to the connections represent by the colored lines

COLLECT

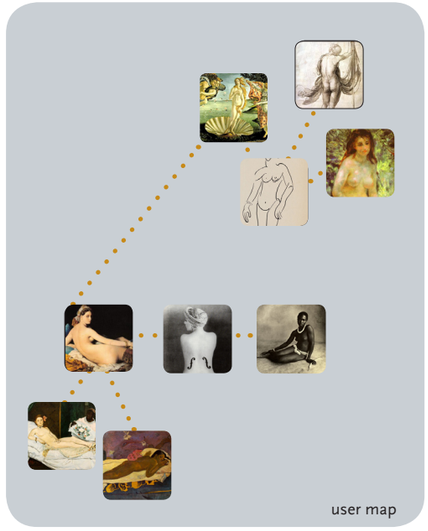
current object museum image

Le Violon d'Ingres
Man Ray
Gelatin Silver Print
1924
Paris





Scroll through collected objects in order, last object is on top



user map

ADD TAG

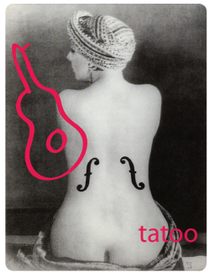
violin, headdress, voluptuous, seated figure nude

CREATE

annotate / draw on existing image or user-generated image

FIND ME

user recommended objects



current object (user's photo if created)

linked to these maps

related information from multiple museums and observation activities

LEARN MORE

FIND ME

museum recommended objects

Man Ray (August 27, 1890–November 18, 1976) was an American Dada and Surrealist artist. He was an admirer of Jean-Auguste-Dominique Ingres' languorous nudes. He photographed Kiki of Montparnasse in the same Ingres pose, painting the f -holes of a stringed instrument onto the print and then rephotographing the print. The image of the transformation of Kiki's body into a musical

MY MAPS

MUSEUM MAP

★☺

Tags
nude woman, profile, black and white

Notes
Why a photo and not a painting?

Linked Objects
Grande Odalisque by Ingres
untitled by Penn

DESCRIBE THE MOOD

museum prompted tags

SEARCH

Mapping Gestures:
Users can touch and drag a collected objects' image to the map and release to place the object in the map. To connect the object to another object, the user simply touches the two objects at the same time. Objects can be added to multiple maps. Once objects are connected, users still can move the objects and all existing connections will remain. To delete an object connection double-tap the two objects at the same time. Users can zoom in and out of the map or any images using a two-finger pinching action.

Note:
The user may move any interface component or component group in order to customize the design of the interface to suit their work flow. If the user-interface is larger than the screen, for instance, on a PDA, a touch sensitive scroll bar will appear across the top of the screen so users can flip between the three vertical sections of the interface.

MuseoMap

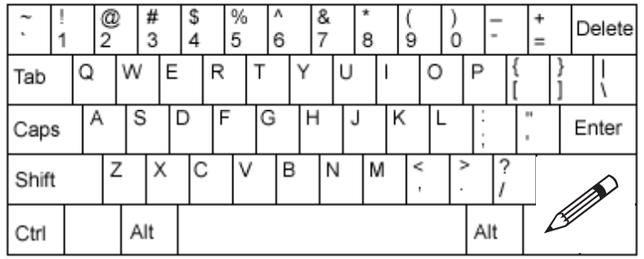
museum logo

User: Sara Brown

send/save

SHARE

find/share with visitors in personal network



the keyboard, drawing tool, and symbol palette will pop-up when triggered by a user action that requires input, or the user bumps the bottom of the screen

snapshot

"Read" / Museum-Generated Side

See / User-Generated Side

User Scenarios

User Model 1- Jeneé
Jeneé has used MuseoMap twice in her hometown of Los Angeles, first at the Los Angeles County Museum of Art and again at the California African American Museum. She was heading to Kansas City for work, but knew she was going to have some free time to fill. She went to her profile page on the MuseoMap web site to look for a museum to visit. She found that the Kansas City art museum had an amazing collection of African masks like the ones that she had collected and mapped during her visit to LACMA. It also recommended that she see the masks in the Native American and Cultures of Asia exhibits at the same museum.

Jeneé also found a lead in her network of friends. An old college classmate had posted a personal tour for the American Jazz Museum in Kansas City. The friend's tour description raved that it was her favorite museum ever. Jeneé visited the Jazz Museum the next week and used MuseoMap to document her experience. She created several new maps as she learned more about the creation and importance of jazz music in the African American community, but she mostly added to maps that she had already created while visiting the California African American Museum. After returning home from Kansas City, Jeneé messaged her friend on the MuseoMap web site to tell her that her tour was great. The two friends messaged several times about what they had seen, and later collaborated to expand the tour for the their next friend who visits.

User Model 2- Ty
Ty is going to the Natural History museum for the first time. He is visiting with his girlfriend and his roommate who decided to accompany him while he did some research for a paper assigned in his ecology class. He and his friends enter the museum and approach the welcome counter where they are told about the MuseoMap program. They thought it might make the experience more fun so they headed to Compass Café. Ty and his girlfriend sit down at a touch-table kiosk to purchase tickets while their friend fiddled with a mini-exhibit nearby. A Compass Café staff member came over to the table bringing three handheld devices. When the group finished purchasing tickets (Ty put a pair of tickets on his check card and his friend used his PayPal account) the group was prompted to create usernames and passwords and to fill out a short survey. They stayed to watch a four-minute tutorial video about MuseoMap. They learned that their devices were automatically networked since they had created their profiles at the same kiosk at the same time. Ty and his girlfriend headed into the main exhibit halls so Ty could find something to write about. Ty's friend stayed back in the Café to finish looking at the mini-exhibit that caught his attention. He was able to catch up with his group later by looking at where they were on the built-in museum map.

Ty wandered and began collecting some objects along the way—a giant tortoise shell from the sea life room, an armadillo from the exhibit on animals from the American Southwest, and lots of tiny fossils. Ty was reading labels and looking around, but couldn't quite find something interesting enough to write a whole paper about. He used the MuseoMap recommendation feature to see where it would lead him. The program sent him to the entomology exhibit to see numerous "beetles." The program showed him that several of the objects he collected were tagged "exoskeleton," and that some of the fossils he collected were insects. While his friends used MuseoMap to take pictures of one another holding insects from the insectarium and played a collaborative activity about scientifically classifying bugs, Ty searched the database for more information about the beetles he collected. He learned that beetles were the largest group of insects, and found a lot of interesting information about the importance of insects to the ecosystem. He e-mailed several things home to reference for his paper including an article about dung and scarab beetles. At the end of the visit Ty met back up with his group at Compass Café to turn in their devices. When he saved his profile at the end of the session the program recommended that he continue his museum journey at the local Anthropology Museum where they had an exhibit titled The Egyptian Scarab. Ty went to go see the exhibit the following weekend, and wrote about beetles in desert ecosystems and the ancient recognition of their importance noted in the Egyptian culture.

Areas for Further Study

The thesis research and conceptual user-experience and interface designs presented in this project would obviously represent just the beginning of a much larger process to implement a program of the scope of MuseoMap. Additional research on the potential implications of this project is needed, including how the collaborative database would be created and how participating museums would contribute. In addition, a deeper exploration of the available technologies to support this project would be needed, especially the feasibility of supporting many types of user-supplied devices.

The next steps for this project would be to conduct extensive research with the target audience to gather information about their motivations and demands for such a museum experience. There are many ways in which this project could be narrowed or expanded. For instance, what possibilities are there for users to submit objects for inclusion in the MuseoMap database? Perhaps there is an installation of public art in the building where they work, or a sculpture in a garden they visited. How could the MuseoMap experience by further extended to create continuity between experiences with objects in museums and in daily life? These types of scenarios could be market-tested to inform the development of the user-experience and interface. The design of the interface, any hardware specified, and the design of the companion web site would need to undergo comprehensive usability testing. The process of researching, prototyping, and redeveloping would take considerable amounts of time and resources. For this project to advance, it would require that a solid business plan and mission be written in order to engage partners in collaboration, as well as seek to seek funding.

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Appendices

Appendix A: Nomenclature

access- a means or freedom to enter a place (museum or institution), and the ability or means to obtain or make use of the information/experiences communicated by, or in the place

cross-disciplinary- leveraging opportunities that arise where separate disciplines overlap, intersect, interact, or become complementary

discipline- a field of study and its related, ordered body of knowledge

information parallax- the ability to see the same information from multiple points of view in order to construct a deeper meaning

information visualization- designing and presenting information in a way that attempts to allow it to be assimilated by the human perceptual system, as opposed to relying on cognitive interpretation

Map/Mapping- these terms are used throughout the project to refer to both the geographic and cognitive mapping supported by MuseoMap, and often refer to both activities simultaneously. 1) visualization describing physical space and showing relationships between characteristics of and features in space 2) visualization and spatial arrangement of ideas used to describe connections and conceptual relationships between them

metadiscourse- is writing that comments on or explains the writing in order to create structure, give instructions to the reader, or make known the writer's intentions

multi-sightedness- refers to the multiple capacities people have for seeing objects and museum interpretation, there is seeing as a physical process, as well as a learned or culturally constructed practices of objectivity versus subjectivity. Additionally, it speaks to the different types of perception that occur when seeing versus reading,

parallax- the apparent change in the position of an object when the person looking at the object changes position. A property of our binocular vision: the distance between our eyes that allows for our perception of form/depth. In the context of this project it has become a visual metaphor for the multi-sightedness of visitors and potential solutions.

touchpoints- physical/tangible elements that represent or provide access to a related service or brand aura

RFID- radio-frequency identification

Social/Social Audience/Museum as Social Experience- in the context of this project it is important to remember that the nature of socializing for this audience includes not only talking and physical interaction, but any communication and interactions mediated by technology

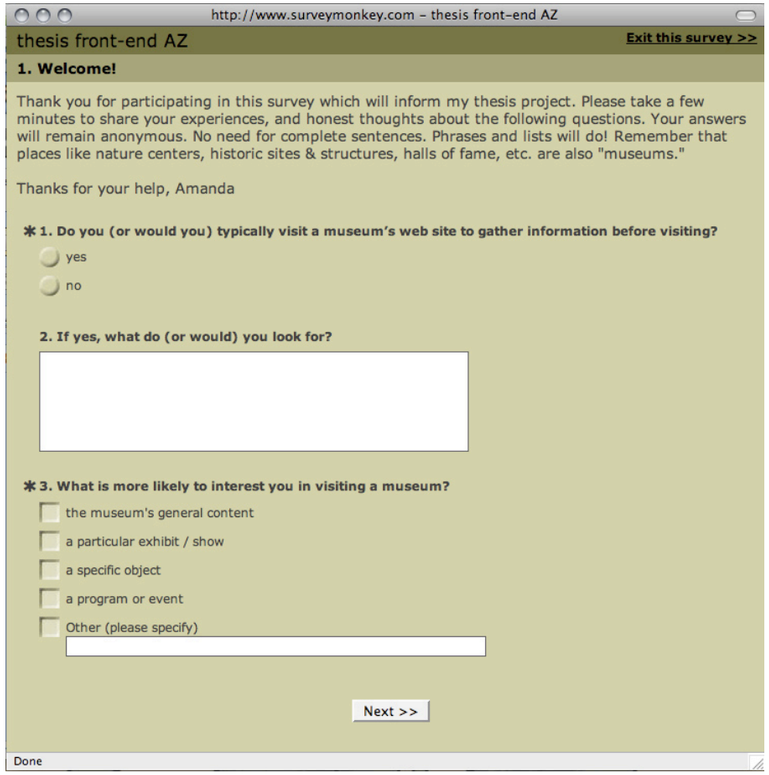
under-served- audiences that are not visiting museums for various reasons generally because the institution is perceived as irrelevant, uninteresting, or otherwise inaccessible

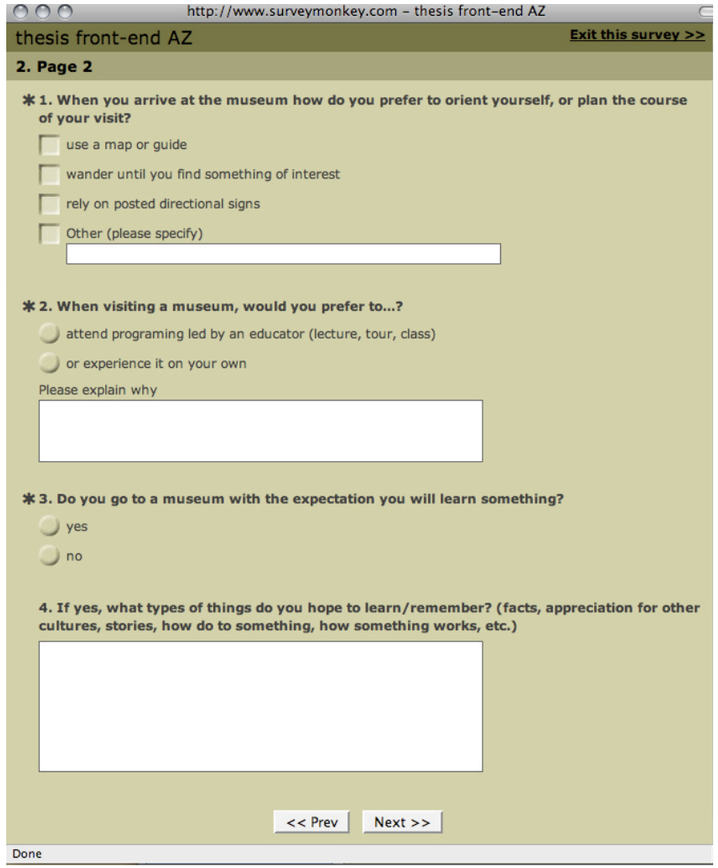
visual literacy- a metaphor for the ability to construct and interpret messages transmitted by visual signs or symbols, and objects and environments

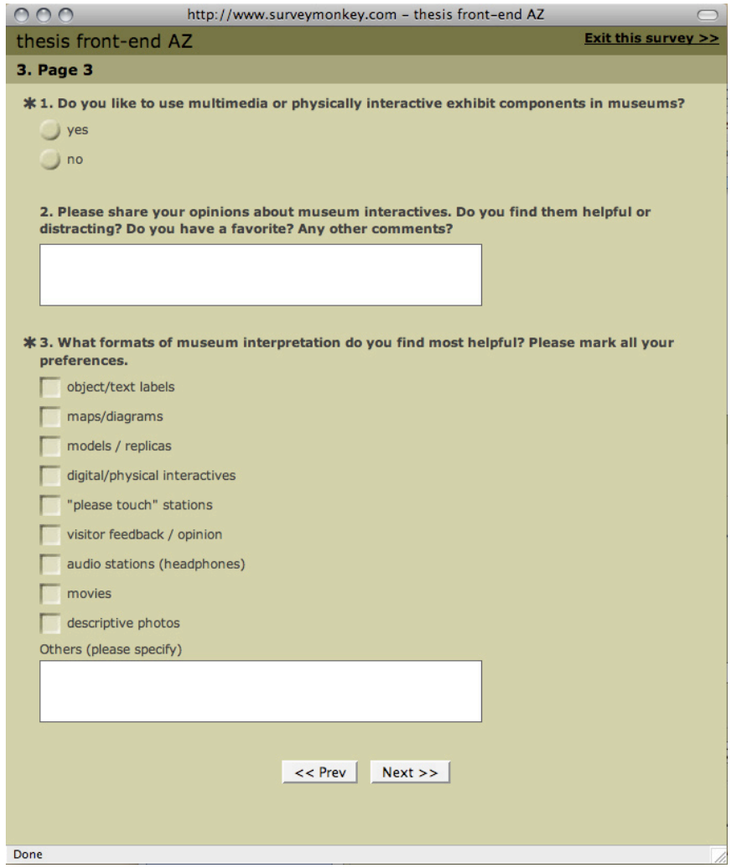
visual metadiscourse- functions like metadiscourse in writing—it is design that makes transparent the structure, intentions of, or a means for approaching a visual message

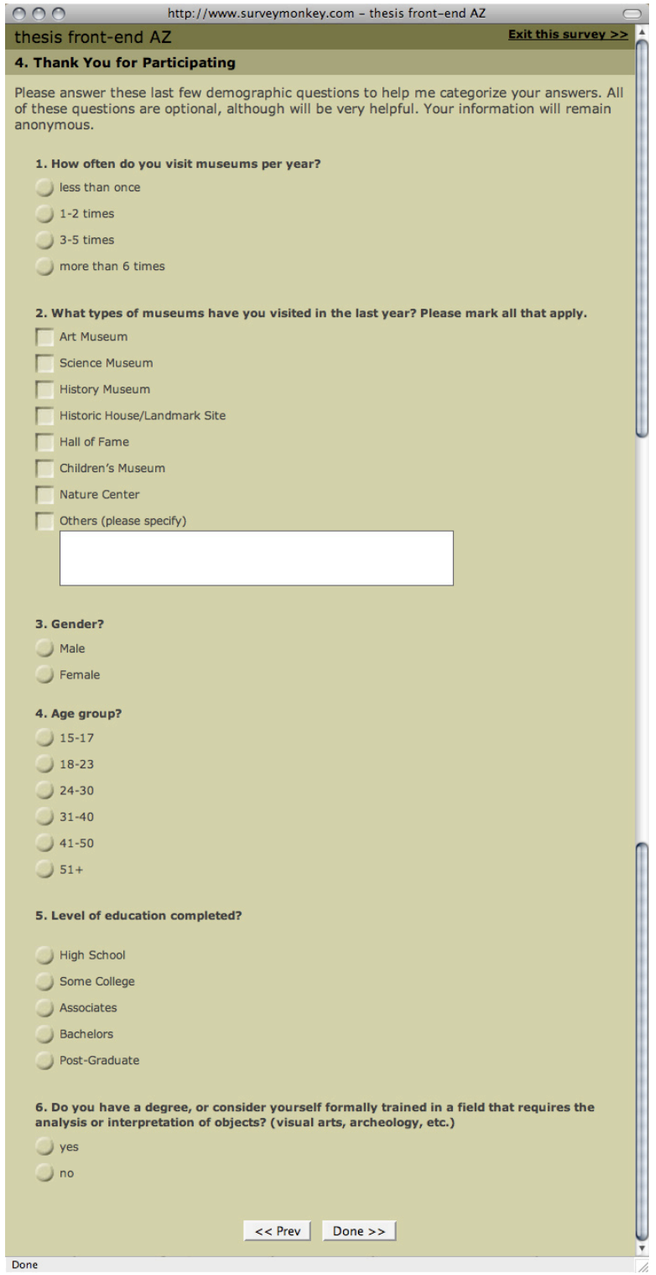
wunderkammer- cabinet of curiosity

Appendix b: Survey Instrument






http://www.surveymonkey.com – thesis front-end AZ
thesis front-end AZ
Exit this survey >>
3. Page 3
✱1. Do you like to use multimedia or physically interactive exhibit components in museums?
yes
no
2. Please share your opinions about museum interactives. Do you find them helpful or distracting? Do you have a favorite? Any other comments?
✱3. What formats of museum interpretation do you find most helpful? Please mark all your preferences.
object/text labels
maps/diagrams
models / replicas
digital/physical interactives
"please touch" stations
visitor feedback / opinion
audio stations (headphones)
movies
descriptive photos
Others (please specify)
<< Prev
Next >>
Done


http://www.surveymonkey.com – thesis front-end AZ
thesis front-end AZ
Exit this survey >>
4. Thank You for Participating
Please answer these last few demographic questions to help me categorize your answers. All of these questions are optional, although will be very helpful. Your information will remain anonymous.
1. How often do you visit museums per year?
less than once
1-2 times
3-5 times
more than 6 times
2. What types of museums have you visited in the last year? Please mark all that apply.
Art Museum
Science Museum
History Museum
Historic House/Landmark Site
Hall of Fame
Children's Museum
Nature Center
Others (please specify)
3. Gender?
Male
Female
4. Age group?
15-17
18-23
24-30
31-40
41-50
51+
5. Level of education completed?
High School
Some College
Associates
Bachelors
Post-Graduate
6. Do you have a degree, or consider yourself formally trained in a field that requires the analysis or interpretation of objects? (visual arts, archeology, etc.)
yes
no
<< Prev
Done >>
Done

Appendix B: Survey Results

1. Do you (or would you) typically visit a museum's web site to gather information before visiting?

88.6% Yes
11.5% No

2. If yes, what do (or would) you look for?
most common responses to open-ended question:

26 "current exhibits/what is on view"
17 "hours of operation"
11 "admission price"
10 "directions"
8 "special events i.e. lecture/performance/free day"

3. What is more likely to interest you in visiting a museum?

83.3% a particular exhibit / show
63.9% the museum's general content
30.6% a program or event
13.9% a specific object

4. When you arrive at the museum how do you prefer to orient yourself, or plan the course of your visit?

54.3% wander until you find something of interest
48.6% use a map or guide
34.3% rely on posted directional signs

5. When visiting a museum, would you prefer to...?

88.6% or experience it on your own
11.4% attend programing led by an educator (lecture, tour, class)

b. Please explain why?
most common responses to open-ended question:

12 "I like to let my pace/flow be led by my personal interests"
9 "I prefer to come to my own opinions about my experience"
4 "Docents/Programs can be helpful if it is a totally new topic"
3 "I like to see it on my own first, & then take a tour on a second trip"

6. Do you go to a museum with the expectation you will learn something?

80% Yes
20% No

7. If yes, what types of things do you hope to learn/ remember? (facts, appreciation for other cultures, stories, how do to something, how something works, etc.)
most common responses to open-ended question:

11"historical/fun facts"
8 "new/other cultures or ways of life"
5 "how things work"
4 "a sense of human progress, and changing thoughts"
3 "things that you can only learn in the presence of real objects"

8. Do you like to use multimedia or physically interactive exhibit components in museums?

80% Yes
20% No

9. Please share your opinions about museum interactives. Do you find them helpful or distracting? Do you have a favorite? Any other comments?
most common responses to open-ended question:

5 "they are not rewarding enough, don't add extra information"
4 "I like them when they are simple/ intuitive, well designed"
3 "they are often poorly designed, hard to use/complex"
3 "they are usually broken"
3 "they interest me when I can find more information about what I am interested in..."

10. What formats of museum interpretation do you find most helpful? Please mark all your preferences.

26 maps/diagrams
25 object/text labels
23 models / replicas
23 movies
21 "please touch" stations
21 descriptive photos
16 digital/physical interactives
12 audio stations (headphones)
4 visitor feedback / opinions

11. How often do you visit museums per year?

5.7% less than once
20.0% 1-2 times
22.9% 3-5 times
51.4% more than 6 times

12. What types of museums have you visited in the last year? Please mark all that apply.

85.7% Art Museum
80.0% Science Museum
62.9% History Museum
62.9% Historic House/Landmark Site
62.9% Nature Center
37.1% Children's Museum
11.4% Hall of Fame

13. Gender?

62.9% Female
37.1% Male

14. Age group?

34.3% age 18-23
57.1% age 24-30
0% age 31-40
8.6% age 41-50

15. Level of education completed?

5.7% Some College
62.9% Bachelors
31.4% Post-Graduate

16. Do you have a degree, or consider yourself formally trained in a field that requires the analysis or interpretation of objects? (visual arts, archeology)

71.4% Yes
28.6% No

Context as Catalyst

Conceptualizing an interface to connect visitors & museums through objects

Amanda Marie Zeitler

This is not a pipe. Renee Magritte 1968

Not all objects interpret themselves.

Thesis Problem

How can design create opportunities for an under-served audience, visitors ages 18-30, to develop methods of learning from objects, as well as provide a means of accessing interpretive and contextual information in object-centered exhibitions in many types of institutions? How can access to objects be designed to be intuitive, engaging, and relevant to this audience, given their preferences for gathering and organizing information to make meaning?

"I prefer to come to my own opinions about my experience."

Audience Profile

User Model 1

Jeneé

Age 28

Lifestyle columnist

Annual income $42,000

User Model 2

Ty

Age 18

Full-time Starbucks employee

Annual income $28,500

Ages 18–30

Under-served Audience

Independent Learners

Tech Savvy

Information Seekers

Social

Museum as an Obstacle

Ronne Hartfield

If museums see their purpose primarily as imparting knowledge, synthesizing specific messages and constraining the outcome of experience to a common set of ideas and concepts, then the way visitors actually use museums is an obstacle.

Project Goals

1. Re-envision information access in museums, particularly the interface between visitors and objects in order to increase the accessibility of learning experiences with objects

2.Create an opportunity for the target audience to have an autonomous experience that is directed by personal interests and inquiry

3. Expand the audience's experience with objects by giving visitors tools to recontextualize objects found in individual displays/exhibits within the museum intended to communicate specific messages, and beyond the museum where they may have multiple other meanings.

Objectives

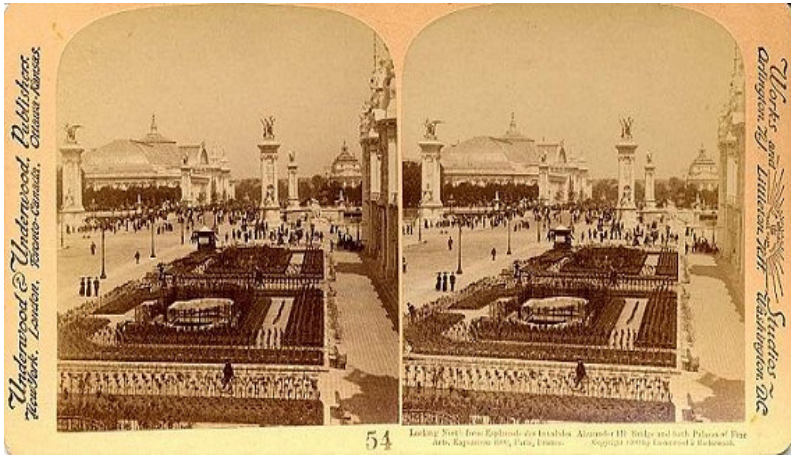
1. Engage the audience with new entry-points to museum content through the dynamic reorganization and contextualization of information from many points of view.

2. Promote active viewer/ object relationships to enable the creation of personal connections and memory

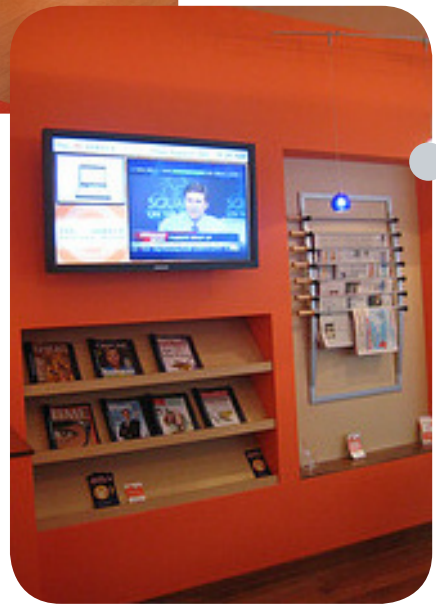
3. Change perceptions about what the museum has to offer by involving audiences in defining its uses and position within society.

Jerry Thompson & Susan Vogel

Museums generally assume that the audience knows how to look, and proceed directly to an explanation of the work, it seems worthwhile to suspend the explanations for a moment, and to take a close look at looking.

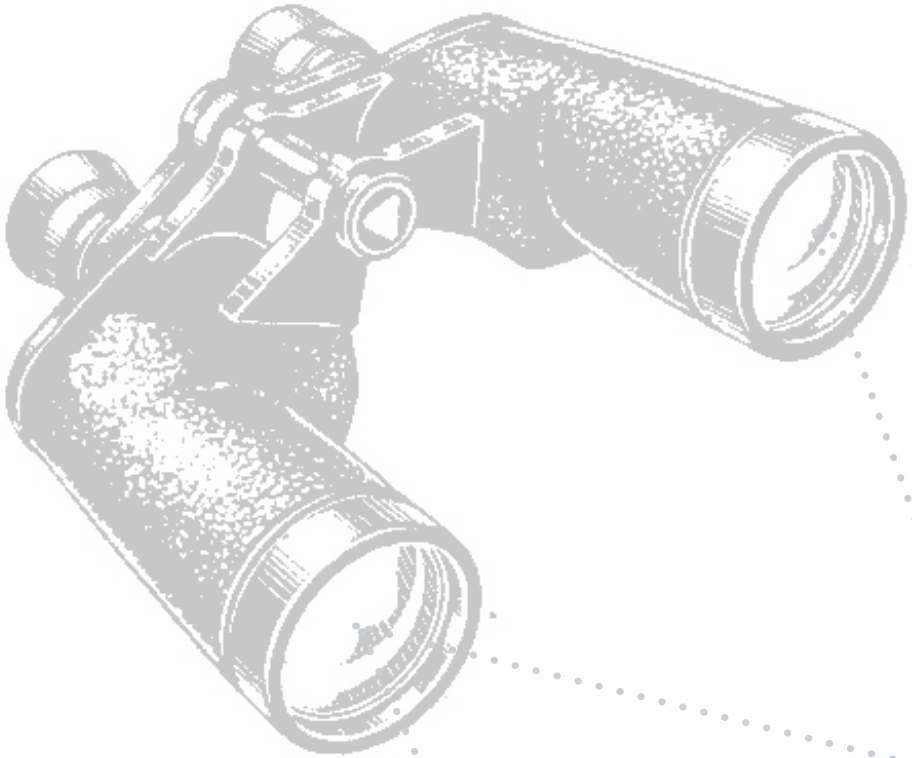


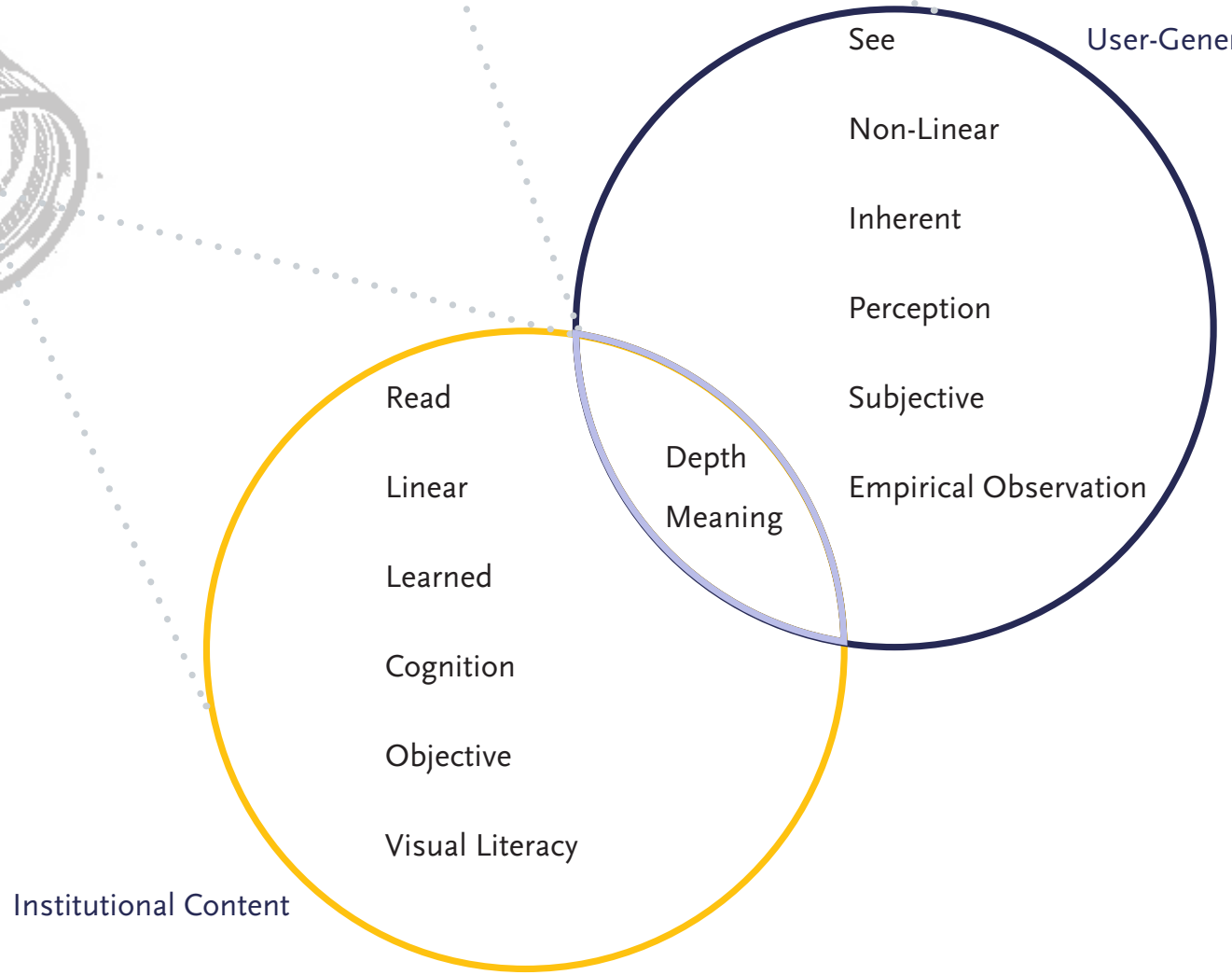
Orientation Café



ING Direct Café

Apple Store




User-Generated Content
See
Non-Linear
Inherent
Perception
Subjective
Empirical Observation
Depth
Meaning
Read
Linear
Learned
Cognition
Objective
Visual Literacy
Institutional Content

"Read" / Museum-Generated Side

See / User-Generated Side

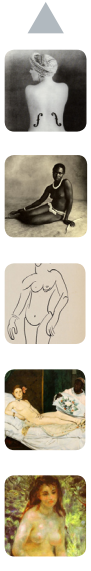
COLLECT

Le Violon d'Ingres
Man Ray
Gelatin Silver Print
1924
Paris

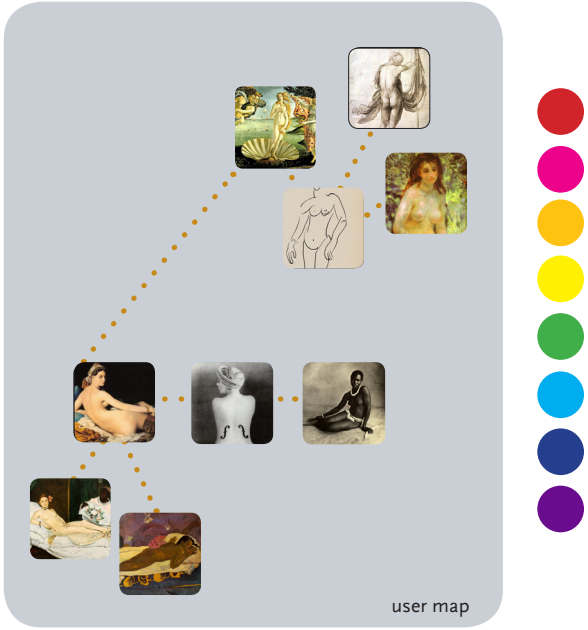
Man Ray (August 27, 1890–November 18, 1976) was an American Dada and Surrealist artist. He was an admirer of Jean-Auguste-Dominique Ingres' languorous nudes. He photographed Kiki of Montparnasse in the same Ingres pose, painting the f-holes of a stringed instrument onto the print and then rephotographing the print. The image of the transformation of Kiki's body into a musical

DESCRIBE THE MOOD

museum prompted tags



Scroll through collected objects in order, last object is on top



user map

SEARCH

MY MAPS

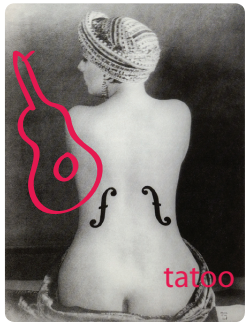
MUSEUM MAP

ADD TAG

violin, headdress, voluptuous, seated figure
nude

CREATE

FIND ME



current object
(user's photo if created)

linked to these maps

★☺
Tags
nude woman, profile, black and white

Notes
Why a photo and not a painting?

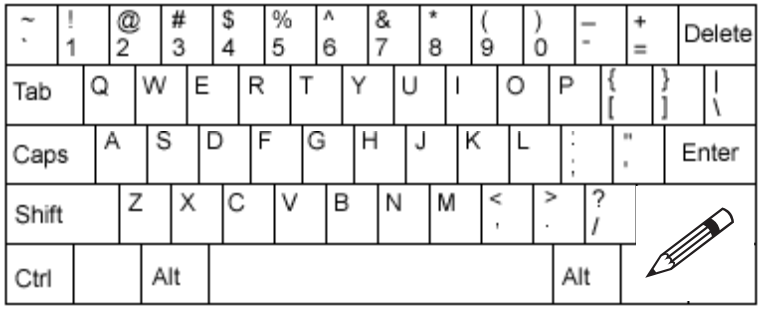
Linked Objects
Grande Odalisque by Ingres
untitled by Penn

MuseoMap

museum logo

Sara Brown

send/save

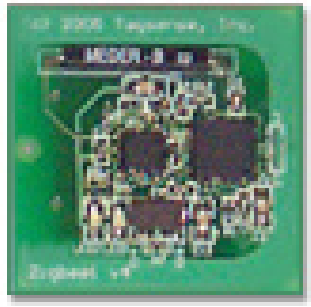


★✓✚⚑❝
👍👎☺😐☹

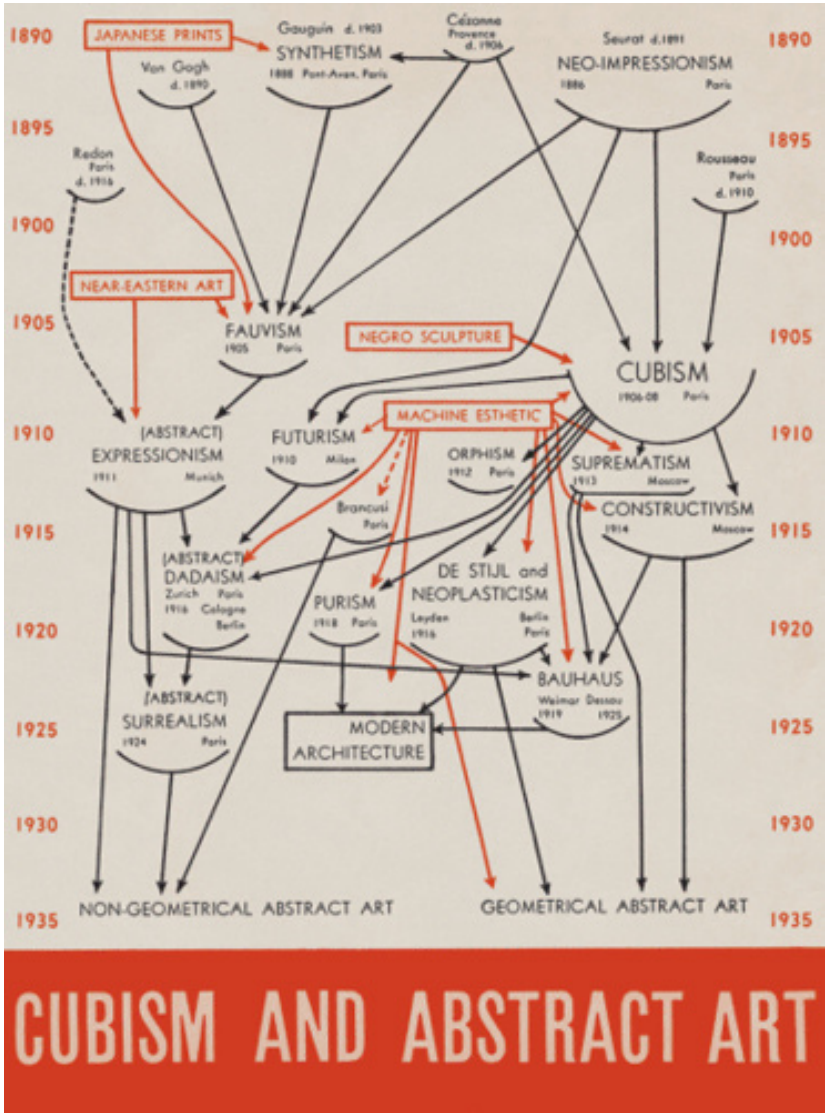
snapshot

iPhone

RFID Tags



Motion Computing
Tablet PC



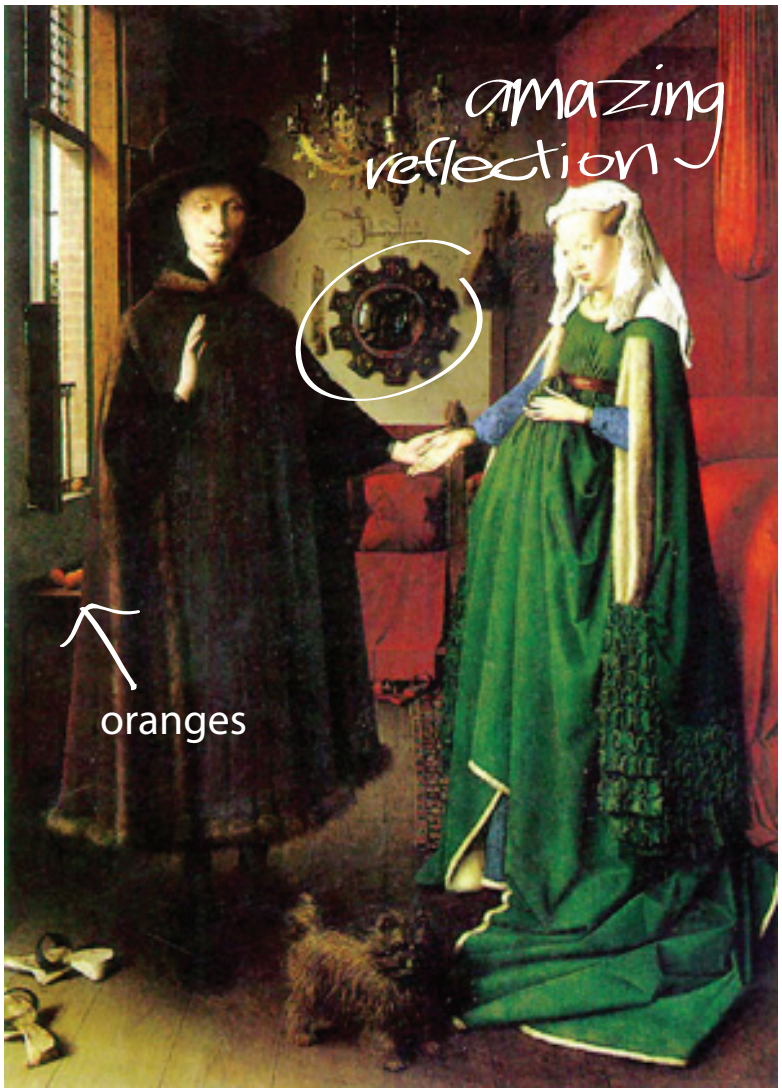
Mapping

Visual Depiction of Cognitive Maps

- task / interactive
- reorganize

Navigation

User-Tracking



Search Indexically

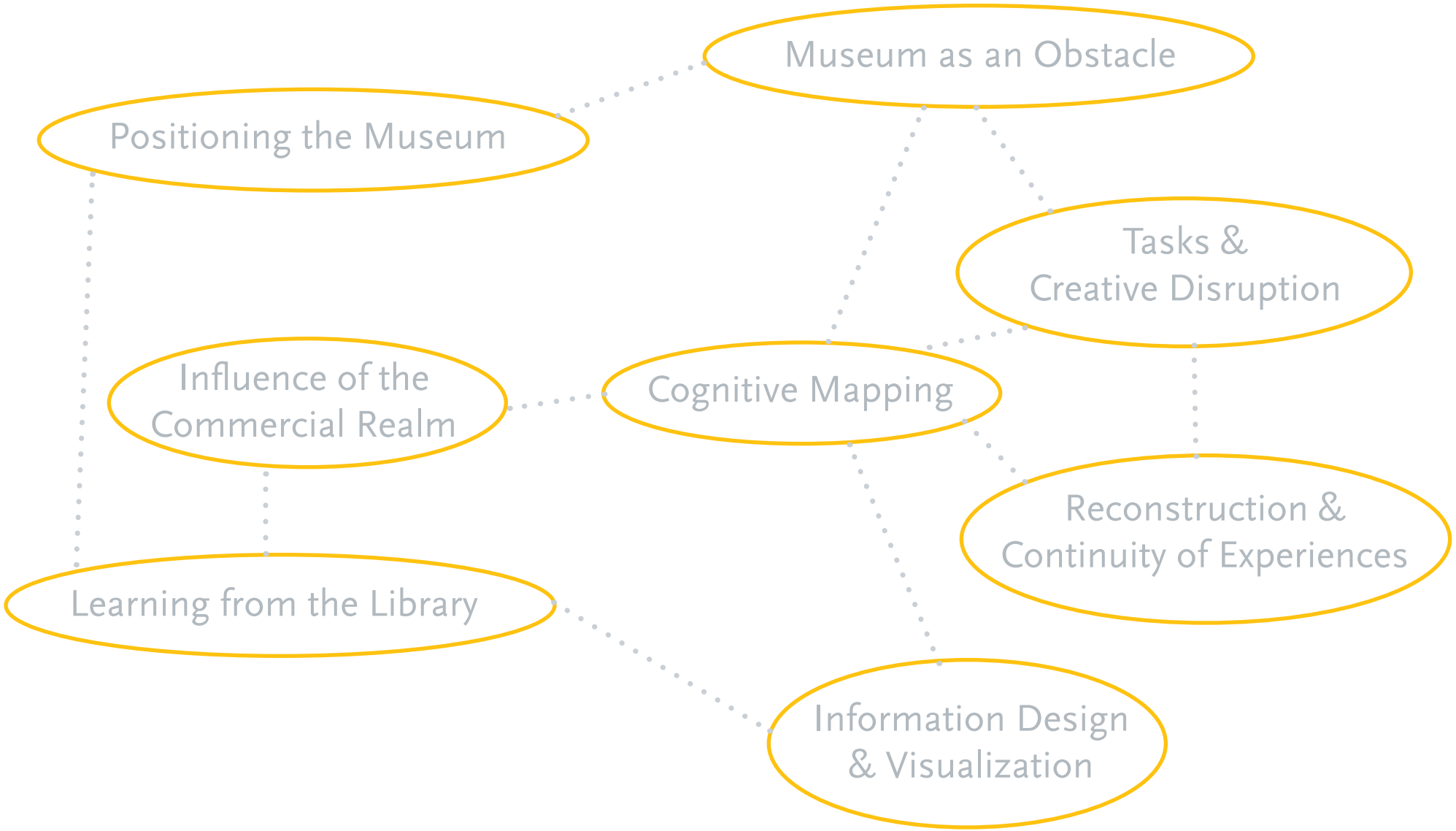
- additional information
- related objects

Bookmark

Tag (annotate)

Photograph / Draw

Observation Activities


Museum as an Obstacle
Positioning the Museum
Tasks &
Creative Disruption
Influence of the
Commercial Realm
Cognitive Mapping
Reconstruction &
Continuity of Experiences
Learning from the Library
Information Design
& Visualization