Evaluating Visitor Experience in the Department of Coins and Medals at the British Museum

An Interactive Qualifying Project submitted to the faculty of
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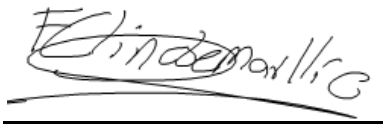
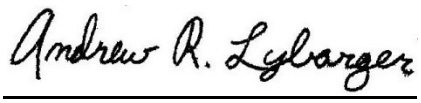
By

Frederik Clinckemaillie **Andrew Lybarger**





Dana Peterson

25 June 2010

Report Submitted to:

Professor Joel J. Brattin **Professor Nikolaos K. Kazantzis**

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Signature Signature

Worcester Polytechnic Institute

Megan Gooch
The Department of Coins and Medals of the British Museum

Abstract

The Department of Coins and Medals at the British Museum sponsored our evaluation of two specific galleries in order to discover new ways to improve their exhibits for visitors. This evaluation included Cases 3 and 10 of Gallery 68 as well as the entire Gallery 69a. To collect data efficiently, we employed tracking studies and surveys as determined by the British Museum Evaluation Framework. In addition, we created new and effective ways for future researchers to display data visually. Of these tools, the most important was the creation of macros in Excel that tabulate data and create heat maps of the galleries.

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Authorship

This report represents the collective work of the members of the 2010 Worcester Polytechnic Institute British Museum Team. Each member of the project team contributed equally to all parts of the project.

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Executive Summary

The British Museum is home to one of the world's most extensive historical artifact collections, maintaining a collection of approximately eight million items and growing. About one million of these items belong to the Department of Coins and Medals (DCM), one of ten departments that exist in the museum. The DCM primarily displays its items in two different galleries in the museum: Gallery 68, the "HSBC Money Gallery," and Gallery 69a, which holds a series of temporary exhibits that rotates every six months. Since 31 March, an exhibit called "Impressions of Africa: Money, Medals and Stamps" has been on display in Gallery 69a. This exhibit concentrates on the development of money in Africa from its colonization in the 19th century to the 21st century.

Our first project task was to evaluate the success of the exhibit setup in Gallery 68 before the changes in Case 3 and Case 10. The evaluation itself involved a series of tracking studies, or discretely tracking a visitor's path through a gallery, noting what cases he goes to and in which order, as well as how much time he spends at each case. We determined the success of an exhibit base on how well the cases (glass holders containing artifacts) in the gallery attracted and held visitors. Simultaneously, we ran a series of surveys and tracking studies assessing the same qualities for Gallery 69a to determine the general effectiveness of the current exhibit "Impressions of Africa."

On 7 June, Gallery 68 underwent some changes. The DCM revised Case 3 with a more appealing case setup as a pilot study and the contents of Case 10 to house a new temporary exhibit showing medals from the British Art Medal Society's annual art medal competition. Our second project task was to re-evaluate the effectiveness of each case by doing tracking studies for both cases and administering a visitor survey for Case 3 to determine the success of the cases and suggest possible improvements.

Tracking studies and survey answers for Gallery 69 and Case 3 of Gallery 68 helped classify visitors into categories of visitor motivation (*social, intellectual, emotional or spiritual*). We sorted visitors into four viewing strategies (*browser, follower, searcher,* and *researcher*) based on the visitor's path through a gallery and how he looked for and found information. We also categorized visitors into four types of

depth of engagement (*orientation, exploration, discovery, and immersion*) based on how much the visitor was willing to seek knowledge in an exhibit (Morris Hargreaves McIntyre, 2005). Classifying visitors helped us rationalize why visitors came to the museum, the type of experience they had and whether the setup of a gallery or exhibit affected their experience. Our results will help the Museum create a more invested visitor group, ensuring that visitors who had a social experience will next time have an intellectual one and so on (Morris Hargreaves McIntyre, 2005).

We used SPSS and Excel to analyse tracking studies done for Case 10 exhibits in Gallery 68 in the last year (Time is Money, Matthew Boulton, the British Art Medal Society (BAMS 2009), and North India (Persian)). Our results suggested that the four previous Case 10 exhibits were all very similar, with very high walkthrough percentages and moderate Attracting Powers. These results are a recurring theme for Case 10, suggesting that exhibits showing flashy objects that require less reading have better Holding Power and Attracting Power. We found that the Holding Power of the previous Case 10 exhibits was moderate to low, possibly due to an overwhelming amount of text. The more recent Case 10 exhibit, "Lamb of God," showed similar trends, with moderate attracting and Holding Powers. These results suggested that visitors looked at the items, but did not pay close attention to the accompanying text.

The DCM made changes to Case 3 and Case 10 on 7 June. The new exhibit in Case 10 showed medals from the annual British Art Medal Society competition (BAMS 2010). Our results suggested that the former Case 3 demonstrated only moderate Attracting Power, despite being close to an entrance. However, the case had a high Holding Power, since the few who came to the case stayed for longer times. We were only able to finish a small number of evaluations on the new Case 3. As such, conclusions on the success of the case have limited validity.

To determine the success of Gallery 69a as a whole, we ran a series of tracking studies and surveys. Our results suggested that most people visit the gallery for an insignificant amount of time. Nevertheless, we found that the visitors who did stay for extended periods of time tended to spend a significant amount of time at each case, giving every case a relatively high attracting and Holding Power.

Our last project objective involved evaluating our surveys and evaluation process over the course of the collection and analysis of data. We considered different ways to make the surveys more efficient to help reduce the amount of time wasted in gallery evaluations, such as eliminating demographical questions on the visitor survey. To determine whether this was possible, we obtained past demographical information for the British Museum and compared it to demographical information from past DCM evaluations as well as what we had already accumulated in our own evaluations. Our results suggested that gathering demographic information was essential for Gallery 69a because the visitor demographics varied greatly over time and exhibitions. For Gallery 68, however, we determined that collecting demographical information might not be necessary in the future. Nevertheless, we recommend that the DCM collect more information in order to reach a determinate conclusion.

Chapter 1: Introduction

The collective design of museums is to serve as engaging reservoirs of history and knowledge. Invariably committed to keeping visitors interested, museums are in a state of constant adaptation in order to suit an ever-evolving social and political environment. Every museum, regardless of theme, strives to engage and inform visitors that are eager to learn and explore. This learner-centered education design allows for a more informal, self-directed style of learning that hopes to satisfy the interests of all potential visitors to a museum. However, in order to continue to design and improve exhibits for all types of audiences, museums must conduct evaluations of exhibit effectiveness and visitor satisfaction.

The British Museum, founded in 1753, boasts being the first national public museum in the world, allowing anyone to visit and explore its treasures free of charge since its opening. The Museum has over seven million artifacts in its permanent and on-loan exhibits. The Museum also plays host to millions of local and international visitors, welcoming nearly six million visitors from 2008-2009.

The Department of Coins and Medals (DCM) is one of ten different departments in the British Museum, housing one of the world's largest numismatic collections in the world. The Department has almost one million display items ranging from the earliest Chinese banknotes to modern currency, as well as art medals from many different cultures. Most of these items are located in the Hong Kong and Shanghai Banking Corporation (HSBC) Money Gallery. Here the exhibits show the progression and development of money over time. Furthermore, the Department hosts a rotating exhibit in Gallery 69a, which has included a hands-on educational programme for school groups to attend and learn about the principles of money.

Last year, a group of students from Worcester Polytechnic Institute (WPI) conducted an observational study and visitor survey in order to evaluate the DCM's main gallery (Gallery 68), as well as the temporary exhibit in Gallery 69a (which was showing "Splendor of Isfahan" at the time). The study evaluated the effectiveness of the galleries and the attracting and Holding Power of each case by assessing such features as "visual appeal" and "manageable text commentary." Based on their findings, the group advised the museum to make certain changes to the galleries in order to better-serve visitors. The

group suggested changes included employing televisions in the main gathering areas of the museum to help advertise the galleries, and improving the educational materials in the exhibit hall. A major finding noted by the students was that Case 10 in Gallery 68 received very little visitation and view time. Their report suggested that this was due to the Case displaying large amounts of text.

In 2010, the British Museum wanted to build on the progress that previous research teams generated in order to improve exhibits in the DCM. In the past, the museum had done several evaluations of the Money Gallery, but was not able to analyse the data properly or thoroughly. These evaluations focused on Case 10, currently housing the "Lamb of God" exhibit, and Case 3, which the DCM selected for a pilot study. The DCM changed the materials on display in Case 10 on 7 June. Following these changes, the DCM wanted to know how successful the new exhibit was in relation to the rest of the gallery. The DCM also implemented some changes to Case 3 on 7 June, and we evaluated the success of these improvements. The Department was also interested in designing a more efficient version of their evaluation questionnaire for Gallery 69a in order to evaluate the temporary exhibit "Impressions of Africa," which is currently displayed in that gallery.

We revisited evaluations from recent years, as well as assessed the changes suggested by the 2009 project team, in order to help the museum provide a more positive experience for visitors. We used many of the same surveying strategies from last year's project team, but focused our analysis and recommendations with special attention to specific cases rather than just the entire exhibit. Much of our analysis focused on major exhibit changes that took place (Case 10 in Gallery 68, for example) in 2009 to determine the effectiveness of the changes in terms of visitor experience. With our conclusions, we hope to help the museum provide a better learning experience for any visitor who comes into the DCM and the British Museum as a whole.

Chapter 2: Literature Review

The British Museum is one of the world's largest museums. It is an incredibly complex entity that requires constant changes to keep it relevant in today's world. Administrators make these changes following a process that they have devised to suit the museum throughout its history. As such, it is important to know where the museum comes from and how it decides how to improve its exhibits before offering improvements of our own. For those reasons, we examined a variety of topics that are relevant to the task.

To understand the origins of the British Museum, we examined the history of the museum as well as the museum's current strategy to remain relevant and have a larger impact in its community. The topic of visitor behaviour and visitor interaction is also important to this project as it dictates by what standards researchers should evaluate museum exhibits and how changes to an exhibit will affect visitor interaction within an exhibit. Once museums understand how visitors behave in their galleries, they can start evaluating exhibits to determine if they are enjoyable and relevant. The manner in which museums perform these evaluations is another key topic to this project. The British Museum, like most museums, has a well-defined evaluation framework, which they use to perform all of their exhibit evaluations. Only after examining these key topics can we begin to understand how the British Museum changes its exhibits to improve the quality of the experience and increase its impact in the community.

2.1 History of the British Museum

The history of the museum began on 7 June 1753, when Britain received a gift of approximately 71,000 objects. Sir Hans Sloane, a collector and physician, had accumulated the collection and wanted ensure its maintenance after his death. Items in the collection included books, antiques, moneys, paintings and artifacts. King George II received the collection and gave a large percent of its monetary worth to Sir Hans Sloane's family in return. At the founding of the museum, King George II donated the 'Old Royal Library' to hold the library collection. The Montagu House, a seventeenth-century mansion located in Bloomsbury, housed the rest of the original collection. The museum is currently located on the site of the old house (The British Museum, 2010).

Starting at the turn of the 19th century, the collection at the British Museum expanded with many acquisitions from the classical era. The museum acquired some high profile antiquities at this time such as the "Rosetta Stone" (1802) and classical sculptures such as the "Discobolos statue" and the marble bust of 'Clytie' (1805) (The British Museum, 2010). The museum therefore established The Department of Antiquities in order to research and maintain these important items. With the creation of this department, the museum was able to make many more acquisitions, including a large number of marble sculptures from the Parthenon. About this time, the Department of Antiquities turned their interest to the ancient Middle East and obtained many objects from archeological excavations. As the museum's collection grew with new acquisitions from many different places in the world, the Department of Antiquities was forced to split into three different departments: Greek and Roman Antiquities, Coins and Medals, and Oriental Antiquities. The museum then turned its focus to preserving objects within the country, generating another department: the Department of British and Medieval Material (The British Museum, 2010).

The British Museum expanded much more as it transitioned into the 20th century. The museum branched out into the ten different departments that exist today. The collection grew extensively over the years. In 1857, a new part of the building called the Reading Room was built to house the large number of books the museum had accumulated. This part of the museum, however, was only accessible by special grant. By the 20th century, the collection had greatly increased its government documents library; most of these documents were moved to a different location for special access to allow the museum to open the Reading Room to the public for research purposes (The British Museum, 2010).

2.2 The Department of Coins and Medals

The Department of Coins and Medals houses one of the world's largest numismatic collections. It has on display collections of currencies from cultures ranging from the dawn of humanity to modern times. The collection contains approximately one million objects, including all forms of currency and art medals.

The department has been in existence since the mid 1800s, starting with the acquisition of around twenty thousand items from the collection donated by Sir Hans Sloane. The collection greatly expanded when Sir Robert Cotton donated his large collection of Anglo-Saxon coins and medals. The collection grew many times with donations from British royalty throughout the 1800s and through purchases from collectors and mints, including an acquisition from the United States of America soon after its formation and creation of its monetary system. Due to the Treasure Act of 1996 by the British Government, the museum was able to gain new items more easily. The act allowed many Roman, Celtic, and Greek items to make their way into the collection. It also allowed the museum to acquire many more complete collections (The British Museum, 2010).

The department has approximately 9,000 items on display at any given time. Most of these items are displayed in a permanent exhibit in Gallery 68, the HSBC Money Gallery. Gallery 69a displays a six-month rotating exhibit showing currencies from different cultures across the world. As shown on the floor plan in Figure 1, the two galleries are on the upper floor of the museum. The current exhibit, "Impressions of Africa," examines the development of African currencies over the last century (The British Museum, 2010).

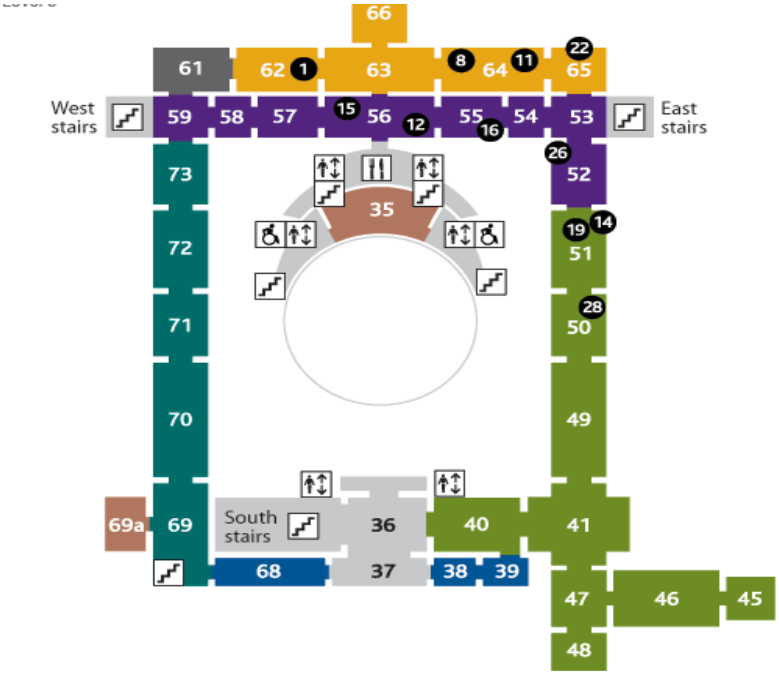

Figure 1: Floor Plan of the Upper Floor of the British Museum. Gallery 68 and 69a Contain the Exhibits of the Department of Coins and Medals (The British Museum, 2010).

2.3 Museum Governance

The British Museum is a non-profit organisation endorsed by the Department for Culture, Media, and Sport (DCMS), which is a civil department of the British Government responsible for all policies pertaining to the arts and national athletics. The goal of the museum is "…to hold for the benefit and education of humanity a collection representative of world cultures and to insure that the collection is housed in safety, conserved, curated, researched and exhibited" (The British Museum, 2010). The museum board consists of 25 members. Trustees are appointed by a code governing public appointments by the Office of the Commissioner for Public Appointments. The board is responsible for general overseeing of the museum and the appointment of board directors. The director acts as the Accounting Officer, responsible for reporting finances to the Government and delegating responsibility for the administration of the museum itself (The British Museum, 2010).

2.4 Museum Strategy

Due to the success of recent exhibits, the museum has been forced to re-evaluate its five-year plan. This change of course will help meet the issues of upcoming cultural changes (the Olympics, for example) and increased visitor flow. The new budget will also address these issues by funding an expansion being built in the north-west area of the museum.

One of the major areas that the museum wishes to invest in is the visitor experience. With the increasing flow of visitors, the museum wishes to discover what captivates and interests visitors in an exhibit, and what will keep them coming back. Over the past few decades, the museum has run surveys and made changes accordingly in many of its different departments. Through this process, the museum is trying to determine how visitors learn, stay interested, and interact with exhibits to bring visitors a better experience.

An integral part of the British Museum's strategy involves its efforts to have an impact in the community. As the British Museum serves as a centre for learning to those who are "studious and curious persons," the museum is part of a large outreach programme to encourage learning of world history, and to increase awareness and education in younger audiences (The British Museum, 2010). In recent years, the

museum sponsored two different sessions for supplementary schools, or afterschool learning programmes, to accomplish this goal. The first session involved a day of structured activities and workshoppes run by museum workers. This programme included many hands-on activities, craft periods, and more. The second of these sessions had no structure, and students and teachers were free to wander and explore the museum at their own pace, and learn what they wanted to learn. Using these sessions, the museum hopes to create a better programme to aid in the education of supplementary schoolchildren (The British Museum, 2010).

2.5 Demographic Considerations

Museum use is a social experience. Museum visitors often arrive in pairs or small groups (Coffee 2007, 280). The overall experience is enhanced by interacting with fellow visitors, friends or family members. Kevin Coffee notes, "Every act of museum use proceeds within complex – extensive and diverse – cultural matrices created by and comprising the users' social practices" (Coffee 2007, 377). Visitor research is critical because it can reveal how visitors, based on their pre-existing 'social' practises or experiences, interpret the museum and how its offerings either engage or disengage them.

The National Endowment for the Arts regularly surveys museumgoers in the United States. Results indicate that 26.5 percent of adults visit a museum annually (Coffee 2007, 379). Most of those visitors are Euro-American (81.2 percent) with an annual income above $50,000 (61.8 percent). Most have an amount of post-secondary education (Bradshaw and Nichols 2004). In 1999, research conducted for Resource in the United Kingdom determined 28 percent of British adults had visited a museum or gallery the prior year. Most were White-European (94 percent) with 36 percent from a higher-intermediate, professional social strata and 30 percent from a junior-professional social strata (MORI 2001).

Information about museumgoers and their social strata can be useful evaluation tools that address questions important to the viability and profitability of any museum. For instance, should museums create exhibits that appeal to their most frequent visitors, or should they boost efforts to attract infrequent visitors, other overlooked social groups, or those of lower socio-economic status?

Exhibits that appeal to children pose special considerations. Children typically

visit museums with a school, church or family group. Doris Ash studied family groups and their conversations while visiting museums (2003, 2004). Her findings suggest that discussion can enable children to learn more deeply. However, Ash also observed, "some parents explain more often to boys than to girls during shared scientific thinking" (Crowley et al. 2001). Does this observation indicate that museum exhibits are more appealing to boys? Are girls *not interested*? Are girls as actively engaged as boys are? Why or why not? Most importantly, are the needs of young women being identified and addressed?

Stephen Bitgood suggests that museum usage is a social experience that actually starts before the visit and often endures long afterwards (Bitgood, 1988). Visitors will decide to come back or *not* to come back, based on whether they enjoyed their initial experience or not. They will recommend or caution against a visit in social situations to family, friends, neighbors and business associates. Visitors' opinions, positive or negative, may influence members of their social group to visit a museum or not. One half of visitors to Old Sturbridge Village, an outdoor history museum in Sturbridge, Massachusetts, decided to come based on recommendations from friends and family (Hayward and Brydon-Miller, 1984). Those visitors formed opinions before visiting the facility. It is important for a museum to anticipate visitors' perceptions in order to fix possible misconceptions and to foster positive attitudes. Since potential visitors may also form an opinion that makes them decide not to come to the museum, it is also important to study non-visitors as well and determine why they did not visit the museum.

2.6 Museum Logistics: Orientation & Circulation

To create a better overall experience, museums must take steps to improve the experience of visitors even before they enter the museum. Ross J. Loomis (1987) states, "Orientation begins with the images and messages that inform the public of the existence and location of a particular museum" (1987, p. 165). That is why systems of *orientation and circulation* are crucial to successful museums. "We have all experienced the slings and arrows of outrageous orientation systems – when we can't find our way to our destination; when we can't find our way inside a building; or when we can't find where we parked our car," Bitgood notes (Bitgood, 1988, p. 155).

Orientation can begin with just getting to the museum. Brochures, road signs,

tourist information, family and friends, MapQuest, and even GPS systems help. It is important to determine where visitors received their directions and whether they encountered any problems. Street signs can be confusing. Addresses can be unclear on buildings. If visitors cannot easily maneuver their way to a museum, that is a significant problem.

Bitgood emphasises that the museum entrance should be visible and accessible for visitors (Bitgood, 1988, 162). The orientation should be obvious and attractive. Information about restrooms, gift shoppes, eateries, exhibits and points of interest should be available at the front door. Once inside, visitors should be able to circulate with ease and confidence. Unfortunately, some visitors may experience frustration, wandering around without a specific destination. Maps that suggest a route can be especially helpful, as Bitgood suggests, "in a study at the Birmingham Zoo, 77 percent of visitors who received maps were using them" (Bitgood & Richardson, 1987).

Exhibit labels are key to facilitating visitor education. J.P. Gutwill (2006) completed a study entitled *Labels for open-ended exhibits: A case study of using questions and suggestions to motivate physical activity* at The Exploratorium. After interviewing 60 visitors and observing nearly one hundred visitors, Gutwill's results suggest, "visitors prefer a mix of questions and suggestions on exhibit labels" (Gutwill, 2006). Gutwell adds, "a question on a label may help motivate visitors to act or reflect. Adding a suggestion seems to help visitors better understand how to interact with the exhibit." The basis of this case study was user friendliness.

Museum architecture – indoor and outdoor -- also can guide circulation patterns, minimizing visitor frustration and confusion (Bitgood 1988, 165). Traffic flow can be controlled with direction arrows, signs, physical barriers and even lighted pathways. Above all, it is crucial for visitors to access exciting exhibits through the maze of orientation and circulation systems that connect these areas. At the end of a busy, information-packed day at the museum, a clearly marked, easily accessible exit is critical.

2.7 Measuring Exhibit Success

Bitgood stresses the importance of 'measurement' to keep informed on visitors' constantly changing needs and behaviours. He notes that museums can measure orientation and circulation patterns through a variety of research methods – surveys

(paper, phone or online), interviews, and direct observation. Measurement procedures should be standardized, reliable, and as comprehensive as possible so that valid data is gathered and ultimately interpreted (Bitgood 1988, 169).

Museums must measure whether or not the exhibits are dynamic and exciting to insure that the museum experience is a rewarding one for visitors. How are powerful exhibits designed and produced? Thomas Malone examined educational computer games to see why they were so popular (1980). He continued his research with Mark Lepper, identifying seven key measurable variables: "challenge, curiosity, control, fantasy, cooperation, competition and recognition" (1987). Deborah Perry applied those insights to a project at The Children's Museum of Indianapolis, incorporating those key variables and other insights (1989). There are six components that her model, *The Color Connection: Mixing Colored Lights*, measures: piques visitors' curiosity; instills a sense of confidence; challenges visitors; promotes feelings of self-determination and control; promotes sensory enjoyment and playfulness; and stimulates meaningful social interactions. According to Perry, the last one of these is particularly important because visitors spend considerable time 'teaching' and 'learning' from each other (1989).

Boston's Museum of Science took a similar plunge with an exhibit, entitled *INVESTIGATE!!* This exhibit involved visitors in open-ended activities and experiments (Bailey, Bronnenkant, Kelley and Hein, 1998). The exhibit encouraged visitors to "think like a scientist" in more than 40 activities that are fun, interactive and educational. While visitors played, the museum staff continuously evaluated the project through tracking studies, interactive observations, interviews, and post-visit phone interviews. The data was analysed, using simple methodologies, and the team noted "visitors' response to the exhibit has been almost unanimously positive" (Bailey et al. 1998, 10).

Museum use is a social experience -- evidenced yet again by the results of *INVESTIGATE!!* Families interacted; people struck up conversations, talking to other members of family groups, to strangers and to themselves. In their book, *Learning from Museums: Visitor experiences and the Making of Meaning,* Falk and Dierking explained that museum visitors often seek more knowledge about themselves and the surrounding world through exhibits and experiences (2000). They are motivated by the opportunity to reminisce about the past, make sense of their own feelings, and place in history. Social

as well as emotional needs are satisfied by museum visits.

Steve McCallion, in his recent article, "Four Ways to Keep the Museum Experience Relevant," documents how the Portland Art Museum recently concluded a three-month experiment and conversation about the evolution of design in China over the last 20 years (2010). McCallion explains, "the museum's objective was to encourage a vibrant discussion by transforming the museum into a social media platform" (2010). Designers, artists, entrepreneurs and others participated in the successful event. Attendance soared with 1,700 new memberships, according to McCallion. Local restaurants hosted after-parties for young attendees and members of Portland's design community moderated blog discussions. The museum attracted a new audience and renewed its traditional base by socially engaging a broader audience. The museum was able to "move beyond the traditional museum experience and remain authentic because it understood its core promise - inspiring conversations through art and culture" (McCallion, 2010). An 85-year-old board member stated, "CDN (China Design Now) allowed the museum to rethink how it connects to people" (McCallion 2010).

2.8 Ever-changing Technology

Selma Thomas discusses an interactive media exhibit entitled "A More Perfect Union" at the National Museum of American History in Washington D.C. (1991). Thomas explains that real people speak to visitors. They do not recite a chronology of events. They tell stories – "real stories that only they know." Furthermore, Thomas notes that their presence brings a personal "intimacy" – a social intimacy – with visitors. Interactive media (and the technology to run it) has a growing presence within the museum experience (1991).

The increasing importance of technology to museums is evidenced by the recent creation of a collective website among the UK's most famous museums, including the British Museum (Coughlan, 2009). In his story, "Museum lovers' social networking," BBC News education reporter, Sean Coughlan explains that museum visitors can find information about exhibits. They also can use the website, *The National Museums Online Learning Project*, to create communities based on their interests. Visitors can set up social networking groups, collect images and videos and exchange creative thoughts and ideas, according to Coughlan. Carolyn Royston, of the Victoria and Albert Museum, a

participating museum, said, “What we want is people to be inspired and talk to each other” (Coughlan 2009). Coughlan noted that the British Museum alone received more than six million visitors last year, offering many opportunities to create museum-based communities (Coughlan 2009).

The future is brighter for museums that creatively address the current interests of museum visitors to include interactive technology and social experiences. Today’s museum visitors are no longer mere attendees or observers. They are technologically savvy and come with higher expectations. Museums are challenged to bridge the technological and social gap . . . and to meet the expectations of visitors.

2.9 Evaluating Museums

Museums have always had to change their exhibits to meet and exceed the expectations of their visitors and to stay relevant in their community. The challenge is to keep up to date with customer interests and update the exhibits to match those interests. To remain current, museums all over the world have to re-evaluate their exhibits constantly to keep the experience fresh for the visitor.

Unfortunately, creating an exhibit evaluation that accurately captures visitor expectations and outcomes is very difficult. One of the challenges that arises when one tries to create an evaluation is that people do not all learn in the same way. Museums are a place of informal learning and, unlike schools; they must accommodate everyone’s learning style and speed if they want to remain successful. Furthermore, most visitors come to a museum with varying motivations and experiences that affect what they get out of an exhibit in a way that can be difficult to predict. In the words of Léonie Rennie and David Johnson, “even a visit for an ostensibly information-seeking purpose may have affective or sociocultural outcomes, often unintended by the exhibition designer” (Falk, John H. 2007). Another challenge is that the visitors who take the least away from an exhibit often assign it the best grade (Morris Hargreaves McIntyre 2005). The reason for that behaviour is that the people who know more about the subject that is being shown can more easily see the improvements that should be made or the flaws that should be fixed. It is a common human reflex to say that an exhibit is fine or great if it is not truly understood. This might signify that the results are not truly representative of the actual public opinion of the exhibit.

2.10 Types of Visitors

Museum visitors learn in many different ways. Their learning styles impact their approach to visiting an exhibit and how much meaning they can make from a particular exhibit. Morris Hargreaves McIntyre (MHM), a British consulting firm specializing in museum research and evaluations, created a "Hierarchy of Visitor Engagement" and a "Hierarchy of Meaning Making" (Morris Hargreaves McIntyre, 2005). The Hierarchy of Visitor Engagement simply describes at what level the visitors make a connection to the exhibit they are experiencing. The stages are social, intellectual, emotional, and spiritual. Someone who engages with exhibits on a social level goes to museums to be with people. Social visitors are usually attracted to objects that look spectacular or awesome. Visitors who are engaged intellectually do enjoy the information given by an exhibit, but do not feel any emotion towards the exhibit. They are detached from the exhibit and as such do not experience it fully. With emotional and spiritual engagement, a true bond is created between the viewer and the exhibit. The visitor feels emotion that creates a more immersive experience. Spiritual engagement goes one step further by causing a powerful change in the visitor's being (Morris, Hargreaves, McIntyre 2005). Clearly, people who engage on these different levels with an exhibit have completely different visitor experiences at a museum.

While the Hierarchy of Visitor Engagement measures how a visitor engages with an exhibit, the Hierarchy of Meaning Making examines how a user goes through and absorbs the material in an exhibit. As can be seen in Figure 2 on the following page, the four levels of meaning making are Browser, Follower, Searcher and Researcher. Unlike the Hierachy of Visitor Engagement, this hierarchy has a progression. A Browser, who just looks at objects randomly, might become a Follower by a properly designed exhibit if his attention is caught by a narrative theme that he wants

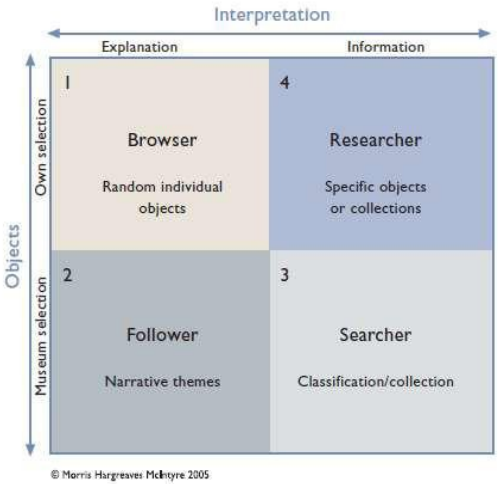

Figure 2: Hierarchy of Meaning Making (Morris Hargreaves McIntyre, 2005, p 11)

to examine further. Similarly, a Follower can change into a Searcher if his interests develop in specific areas which he investigates futher in a gallery. Searchers visit the museum to see and learn more about a familiar subject. A Searcher becomes a Researcher if the subject enthralls him enough that he becomes an expert on the matter, attending museums to look at "specific objects or collections" related to that field (Morris Hargreaves McIntyre 2005). According to MHM, a successful exhibit is one that allows people from all levels of the Hierarchy of Meaning Making to experience the exhibit and develop to understand an exhibit at a higher level. Visitors who progress through the Hierarchy of Visitor Engagement benefit more from an exhibit than visitors who don't undergo this progression.

For a curator, knowing what types of visitors pass through a gallery is tremendously important. Visitors on different levels of the Hierarchy of Meaning Making and Hierarchy of Visitor Engagement expect different types of exhibits. For example, Social visitors who browse through exhibits expect to see exhibits that are both awesome and easy to understand. Searchers and Researchers desire more in-depth information on the subject. By knowing his audience, a curator can create an exhibit that is more appealing to the visitors of the gallery.

2.11 Trends in Museum Evaluation Strategies in Great Britain

While museums in Great Britain have been collecting visitor information via evaluations for a long time, using this information to change and improve exhibits is recent. Before 1979, museums had very little use for visitor information. Museums were free to the public and often saw visitors "as a nuisance – getting in the way of important work" (Morris Hargreaves McIntyre 2005). This issue was rectified in 1979 when Margaret Thatcher became Prime Minister. Spending cuts were issued and museums were pressured to show that the money they received from the state was put to good use. The external stress forced many museums to start counting visitors and surveying them for demographic information. Over the years, many restrictions were enacted from different agencies and organisations, making the information so extensive that no one could use it. By then, evaluations had become a burdensome duty in order to satisfy requirements rather than the wealth of information it was intended to offer. In the words of Morris Hargreaves and McIntyre, "the task has become so technical and, frankly, so

dull, that it renders the whole exercise a bureaucratic one" (2005, p. 6). This attitude has changed in the past several years as both museums and government associations have begun to use museum evaluations to improve the visitor experience. The key to the change has been a shift in focus from quantitative information to qualitative information.

The biggest evidence of the current change is the framework for qualitatively measuring the "success" of an exhibit. In Great Britain, the framework was created by the Department of Museum Studies at Leicester. It is called the Inspired Learning for All Framework, and is based on seven Generic Learning Outcomes. These are areas of the human psyche in which exhibits should induce a positive change. A similar framework to the British framework was developed in the United States at around the same time. The American framework was called the Framework for Evaluating Impacts of Informal Science, and was created by the National Science Foundation. The aforementioned framework was based on Impact Category, another word for the Generic Learning Outcomes seen in England. The categories, or Generic Learning Outcomes, include awareness and knowledge, skills, attitude, interest and behaviour (White, Kimberly Jean 2009).

The British Museum has been adopting the trend of qualitative surveying in its evaluations. In recent years, the museum has performed several evaluations on its galleries, providing information about the kind of visitor the museum attracts as well as the success of its exhibits. These analyses are gauged in terms of how much opportunity exists for visitors to climb both the Hierarchy of Meaning Making and the Hierarchy of Visitor Engagement, as well as visitor demographics. Using this information, the museum can create exhibits that are more engaging and meaningful to visitors of all demographics and preferred learning types.

One of the most recent evaluations of the Department of Coins and Medals was conducted by a Worcester Polytechnic Institute group. In the project, Gaxho, Skene, Skorinko and White performed a tracking study and a survey for gallery 68 and 69a (White, Kimberly Jean 2009).

The group then analysed the data to examine which case had the ability to both attract and hold visitors. The group also made recommendations for case 10. The case has a central position in gallery 68, awarding it a large amount of potential visitors.

However, the evaluation revealed that less than fifty percent of the people who glanced at the case stayed to learn more of the material, and only a single person out of the 25 people evaluated stayed at the case for more than 40 seconds. For this reason, Gaxho et al. recommended that the case be changed to have less text and more features that are appealing to the eye instead (2009). This year, changes were made to the exhibit and we will have to judge how successful these changes are for case 10 and gallery 68 as a whole.

2.12 Conclusion

The British Museum is one of the world's largest museums in both collection size and visitor volume. One of the world's largest numismatic collections in the world is housed in the Department of Coins and Medals. Many of these items are displayed in a permanent exhibit in Gallery 68 (The HSBC Money Gallery). Gallery 69a displays a 6-month rotating exhibit showing currencies from different cultures across the world.

Due to the success of recent exhibits, the museum has been forced to re-evaluate its five-year plan. One of the major areas that the museum wants to invest in is the visitor experience. With the increasing flow of visitors, the museum wishes to discover what captivates and interests visitors in an exhibit, and what keeps them coming back. As we described here, the museum has a developed a framework for obtaining visitor information. This framework includes running surveys and questionnaires to gauge visitor interest and learning styles, and has helped the museum make appropriate changes in many of its different departments. Using this process, the museum is trying to determine how visitors learn, stay interested, and interact with exhibits to bring visitors a better experience.

Museum use is not only a learning experience, but also a social experience. Information about museum-goers and their social strata can be useful evaluation tools that address questions important to the viability and profitability of any museum. Visitors decide to come back or *not* to come back, based on whether they enjoyed their initial experience or not. Ease of orientation and circulation are important factors. It is also critical that exhibits are dynamic and exciting to insure that the museum experience is a rewarding one for visitors. Today's museum visitors are no longer mere attendees or observers. They are technologically savvy and come with higher

expectations. The challenge is to keep up to date with customer interests and update the exhibits to match those interests. To achieve this goal, museums all over the world have to re-evaluate their exhibits to keep the experience fresh for the visitor. Using this information, the museum can shape its exhibits to be more engaging and meaningful to visitors of all demographics and preferred learning types.

Chapter 3: Methodology

The goal of our project was to help the Department of Coins and Medals at the British Museum to improve their evaluation process as well as their ever-changing exhibit setup. There were several different objectives that we were tasked with completing. These included:

1. Evaluating Case 10 in Gallery 68 and any data that has been tabulated about the case in recent years.
2. Evaluating Case 3 in Gallery 68 and any data that has been tabulated about the case in recent years.
3. Evaluating Gallery 69a and determining its success.
4. Evaluating the effectiveness of the current evaluation and survey process that the museum currently has in place.

To accomplish these objectives, we employed the British Museum's Evaluation Framework, which included the use of surveys and tracking studies. The following sections will discuss the means by which we accomplished these objectives.

3.1 Gallery 68 and 69a

The methodology used in this project is very dependent on the environment in which it was implemented. As such, it is important to understand the structure of Gallery 68 and Gallery 69a before examining the methods and tools employed in this project. The HSBC Money Gallery is the DCM's permanent exhibit, accommodating 19 cases of artifacts. The exhibit is housed in a large room (Gallery 68) with wide entrances at each end of the gallery leading to other parts of the museum (see Figure 3 for gallery layout). Due to the design of the gallery, visitors utilize it in several different ways. Some visitors browse through the gallery's panels and cases while others use it as a gateway to the rest of the museum. The cases along the walls of the gallery contain smaller objects and are arranged chronologically and according to topic. This setup

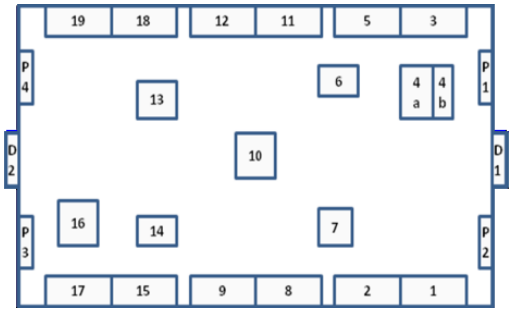

Figure 3: Floor Plan of Gallery 68

allows visitors to follow the flow of the cases and to easily find a specific topic or time period. The cases stationed medially contain larger, more striking objects.

Our evaluation of Gallery 68 specifically concentrated on Case 3 and Case 10. Case 10 is approximately waist-height and displays rotating exhibits; new exhibits occupy Case 10 roughly every 6 months. Case 10 displayed the exhibit "Lamb of God" 10 until June 7th. This exhibit demonstrated the use of the Lamb of God image on coins and artifacts throughout history.

Figure 4: Case 10 Displaying the "Lamb of God" and British Art Medal Society Medals.

After June 7th, the "Lamb of God" display was replaced with a new exhibit displaying medals from the British Art Medal Society annual competition (see Figure 4).

Figure 5: Old and New Versions of Case 3

Case 3 in Gallery 68 is a larger, upright case along the wall of the gallery. As such, it contains more objects and larger objects than Case 10. The theme of case 3 is "Money with a Purpose." Like Case 10, the DCM altered the contents of Case 3 on June 7th. Instead of changing the artifacts, however, the department changed the font, font size, and panels in Case 3 (see Figure 5).

Gallery 69a is a smaller gallery used to house the department's temporary exhibits. The exhibit "Impressions of Africa" was on display at the time of our project. This exhibit documented the colonization of Africa and the continent's struggle to regain its independence through the production of money, stamps and other artifacts. The gallery itself is somewhat secluded, attached to the Greek and Roman Times exhibit in gallery 69. Gallery 69a has one entrance, causing all visits to be deliberate. This might contribute to Gallery 69a garnering less traffic than Gallery 68. The design of Gallery 69a involves

10 cases and 7 possible panels (see Figure 6 for gallery layout). Nine of the 10 cases (3 large cases against one wall and 6 small cases in a round) contain relatively small objects. Case 10 is located in the centre of the room and contains larger objects to attract visitors into the gallery (see Figure 7). While inside Gallery 69a, visitors can also visit the DCM's reception window and see the large metal door to the DCM stationed on the wall opposite the entrance to the gallery.

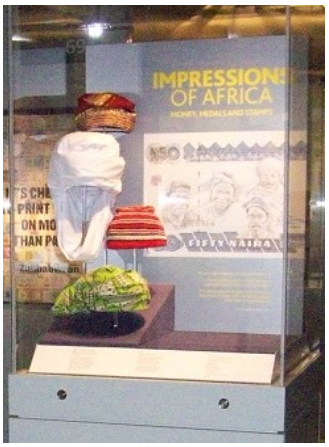

Figure 6: Case 10 of Gallery 69a

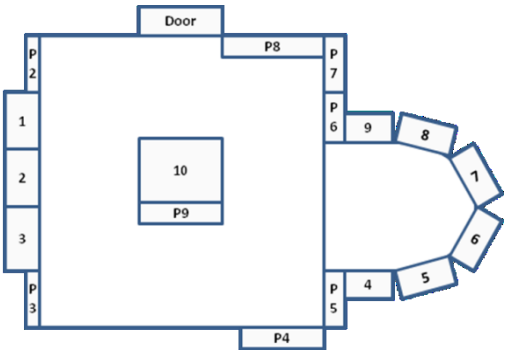

Figure 7: Floor Plan of Gallery 69a

3.1 The British Museum's Evaluation Framework

The British Museum is constantly changing its evaluation process to allow for better collection of data. The most recent methods allow the museum to maintain a certain standard of continuity between results obtained by collecting and analyzing both quantitative and qualitative forms of data. This continuity helps the museum analyse and compare the data they collect from year to year to recognize trends and change exhibits accordingly.

The museum employs two different methods in order to collect a full evaluation of the current state of an exhibit; tracking studies and surveys. This strategy enables researchers to collect multiple forms of data about any given visitor. Tracking studies involve watching and recording a visitor's path through an exhibit. This method answers questions like which cases visitors are more likely to look at and how long a visitor spends at each case. After the visitor has finished viewing the gallery or specific case, the researcher will then administer a survey. The main purpose of the surveys is to gather more in depth data such as visitor demographics as well as visitor opinion about the

gallery. Together, these methods allow for a very thorough evaluation of any visitor's experience in the exhibit.

As discussed earlier in many different parts of the project, the purpose of the evaluations is to determine the success of an exhibit and the ways to maximize future success. As defined by the British Museum's "Guidelines for evaluating an exhibition" (Appendix B), we are able to measure success by the length of a visit, the number of visitors, the visitor's engagement with the cases (as in Attracting and Holding Powers), and the key messages received by a visitor. The tracking studies and surveys allow us to quantify these ideals.

3.1.1 Tracking Studies

A tracking study is a museum evaluation tool that allows a museum to learn how visitors interact with the gallery. It consists of tracking the pattern a visitor takes from one exhibit to another and how the visitor interacts with the exhibits. The process includes determining which exhibit grabs the visitor's interest, how long the visitor stays at an exhibit, and how the users learn about the exhibit. Assessing user learning includes whether the visitor has a guide of some sort, human or electronic, or if the visitor discusses the information presented with others. This information gives the museum an objective perspective on which exhibit is most appealing and interesting to visitors.

The biggest hazard in tracking studies is the bias that can skew the data. People behave differently if they are aware that they are being observed, causing any data collected under this circumstance to be unusable. For this reason, keeping the subjects oblivious to the researcher's presence is vital. The precautions required to make certain the subjects remain unaware depend on the setting in which the study is done. As such, the British Museum methodology for evaluating the gallery is the most accurate manner to perform the evaluation, since the museum is already conscious of the setting and the challenges of performing tracking studies in that environment.

To see the tracking study forms for both Galleries 68 and 69a, please see Appendices C and D.

3.1.2 Surveys

The second critical tool of the British Museum framework for exhibit evaluation is the questionnaire survey, also called an exit survey. Exit surveys are used to acquire quantitative information on visitor demographics in addition to qualitative information about the experience of visitors who visited the gallery. By asking questions to visitors after they explored the exhibit, the museum can gather more insightful information than can be obtained by only using a tracking study. The surveys collect information on which exhibit was the most successful, any captivating information the visitor learned from the gallery, or even specific improvements that should be made to the exhibit. These questions reveal how much the visitor enjoyed and learned from the exhibit. The answers are crucial because knowing what a visitor gained from an exhibit is essentially the only way of determining whether an exhibit is a success. No amount of positive tracking study data will help an exhibit appear successful if the questionnaire surveys reveal that the visitors did not learn from or enjoy the exhibit.

Similar to the tracking study, we must be careful when implementing the survey to prevent bias in the answers we receive. Questions must be phrased in a way that reduces confusion and response bias. Visitors must not be influenced to answer a certain way or the data will be invalid and useless to the museum. Achieving an un-biased questionnaire can be very difficult because people often respond to questions to please the researchers. To prevent this behavior from skewing the data, it is necessary to specify before the interview that the museum will not be offended by negative responses to any question on the survey.

To see a copy of the survey used in Gallery 69a, please see Appendix E.

3.2 Evaluation of Gallery 69a

The objective concerning the evaluation of Gallery 69a was by far the most complicated of the four. One of the many challenges facing museums is sifting through and obtaining the important information out of the mountain of data that result from an evaluation. As a team, we worked to make the process of evaluation Gallery 69a less time consuming. To do this, we reviewed past evaluations of the gallery to examine trends and determine which factors are most relevant to the British Museum. Once we determined the most important factors, we were able to amend parts of the surveys so that we were

able to collect the most amount of useable and informative possible. This amendment involved changing the evaluation questionnaire so that only the most relevant questions are asked by the researchers, allowing the museum to acquire the necessary feedback without needing to filter through large amounts of irrelevant data. Using a programme called SPSS (a statistical spreadsheet programme by IBM), we created a document that was able to analyse the data and specify the important information efficiently. This spreadsheet made the entire evaluation process of the gallery both easier to implement, since the removal of irrelevant data will make the process shorter, and more useful to the museum.

The second component of the fourth objective involved evaluating the *Images of Africa* exhibit using the established British Museum criteria involving the use of both tracking studies and exit surveys. The interest in a study of Gallery 69a was to evaluate the general effectiveness of the exhibit as a whole and to determine whether visitors use any of the maps or panels.

As discussed in the surveys section, the issue of biases in both the survey and tracking study process is very relevant to Gallery 69a. This issue is primarily due to the fact that the gallery is a very limited space, allowing everyone in the room to be noticed at some point. If the researcher is in the room holding a clipboard, timer, and writing down details about a visitor, he or she is sure to be noticed. To overcome this problem, we developed more subtle methods. Mainly, we accomplished the task in groups of two researchers. One researcher functioned as a tracker in the gallery and carried a small laminated note-card sized map of the gallery. The compactness of this map allowed the tracker to follow a visitor in a discreet manner. Just outside the gallery, the second researcher functioned as a timer and noted the total amount of time the visitor explored the gallery. When the visitor exited the gallery, the timer approached him or her to implement a survey. At the end, both researchers collaborated to create a full report on the visitor that was just monitored.

3.3 Evaluation of Gallery 68

The evaluation of Gallery 68 was done in several phases. First, we conducted tracking studies to help determine the success of the current setup of the gallery. The use of the tracking studies was primarily to track each visitor's entire path and behavior

through the gallery, including stops along the way. One of the points that we measured in the tracking studies was *walkthrough percentage*, or how many people move through the exhibit without viewing a specific display. This measurement helped assess the exhibit's ability to attract the attention of visitors. Another point we assessed with the tracking studies was *dwell time*, or the average number of seconds a visitor spent at each display, which allowed us to evaluate the consistency of visitor interest, or Holding Power of the case. In order for us to gauge visitors who are looking for something in particular, we were also counting and tracking the number of visitors who stopped first at each display. We also had to account for those visitors with no specific interest in a certain display in the *percentage of browsers* category, which refers to visitors who chose not to follow the story of the display. Of particular interest to the museum were visitor viewing strategies (*follower, searcher, researcher* and the aforementioned *browser*), which every visitor employs as they proceed through a museum. We observed these "viewing strategies" (Morris Hargreaves McIntyre, 2005) and recorded them in our analysis of the tracking studies. This process did not involve surveys, as the department was only interested in the current Attracting Power and Holding Power of the cases.

The next part began with about 3 weeks left in the project. Over the three days of 7-9 June, the contents of Cases 3 and 10 changed. Case 10 hosted a new exhibit showing art medals from various places and times around London. Case 3 hosted a new label structure and a slightly altered set of items. This setup was part of a pilot for the gallery to determine the most effective setup of a case to be implemented on the rest of the gallery in the future. The setup included a slightly different arrangement of the items and different labels, displaying less words and larger, more concise text. Our job was to track what visitors looked at in Case 3, to determine how successful Case 10 was in comparison to the rest of the gallery, and to conduct exit surveys on the visitors we track. Once we finished collecting the data, we used statistical analysis to draw a conclusion and make recommendations on improvements to the department.

3.4 Statistical Analysis of Data from Tracking Studies and Surveys

After the data for the tracking studies and surveys was collected, we further analysed it by using statistical analysis methods. These methods told us many different things about the type of people that came through the exhibits as well as the success of

the current setup of the cases or the exhibit as a whole. One of the types of tests we conducted was the "double tailed t-test." Researchers use this test when there are two equal or comparable populations and this test allowed us to compare the demographic data we collected in our surveys with the demographic data available for the entire museum. The programme SPSS allowed us to make this comparison quickly and easily and helped us determine whether we need to continue collecting demographic data in our surveys. We then determined if any questions could be removed from the questionnaires so as to save time for us and for visitors.

As for the rest of the data analysis, most of the statistical analysis was handled in Microsoft Excel. Excel allowed us to create visual graph depictions of our data, making our results easier to understand for those who have only a basic understanding of statistics. We were able to use built in mathematical functions of Excel in order to quickly and effectively tally the information that was entered into certain points of the spreadsheet. The spreadsheet was then able to calculate the totals and create percentages for various characteristics using these data, such as the number of visitors who visit each case. Excel then ran the results through a macro (a pre-coded function), created in Excels primary language, Visual Basic, which then produced a heat map that visually displayed the results of the data.

With the creation of some macros in Excel, we were able to provide the DCM with new analysis tools to create heats maps easily after running their own evaluations. This process involves the use of Excel to compile all data inside a spreadsheet, importing a pre-coded macro, and running the macro on the Excel sheet with the given data. The final product is a heat map visually displaying data about the galleries. All of these steps have been described in detail with visual aids for anyone wishing to run the macro. Please see Appendix H to view the macro users guide.

3.5 Methodological Observations

While performing some of the tasks, we noticed that certain actions or phrases of that we used in our tracking studies and surveys worked better than others. In the surveys, there were several questions that had the issue of being leading or unclear in nature. One question, reading "What impression of Africa did you get from the gallery? Maybe 5 words or associations that come to mind?" led to a little trouble since it was

asking for a specific amount of ideas forcing visitors to forcibly fabricate ideas about the gallery. Rephrasing the second part to read "…Maybe a **few** words or associations…?" tended to work better so that the visitor wasn't forced to come up with ideas past what they had already thought. Another question that proved to be flawed was "What time period do you think the exhibit spanned?" Many visitors thought it was referring to how long they spent inside the exhibit. Rephrasing it to "What time period of history, or historically, do you think this exhibit covered?" tended to work much better.

3.6 Summary and Timeline

Objectives 1 and 2 were accomplished by evaluating Gallery 68 with the use of tracking studies and exit surveys. These techniques focused mainly on specific cases in order to emphasize these exhibits over the rest of the gallery. However, we were also interested in how the change of one case affected how a visitor looked at the rest of the space. Objective 3 was fulfilled using a similar process in Gallery 69a. Here, we were more interested in the gallery as a whole than a few individual cases. Therefore, we evaluated how the gallery functions overall instead of examining the success of certain cases. Objective 4 was completed by constantly reviewing the validity of the data we collected via the survey methods we employed. This step helped ensure that we were able to give the museum the best recommendations from the data we collected.

In order to accomplish our goals in the 7-week time parameter, we followed a strict timeline. Please see Figure 33in Appendix A, for a chart depicting the timeline followed.

Chapter 4: Data and Findings

Throughout the project, we collected a significant amount of data pertaining to the two galleries that we evaluated. This chapter discusses in detail the analysis of said data and what it represents in terms of our goals in order to complete each objective. The chapter begins by discussing the biases and limitations associated with the data collection process. This section helps to put the rest of the findings into context as it identifies the validity of those findings. The next three sections discuss the findings on Cases 10 and 3 of Gallery 68 and the findings on Gallery 69a, respectively. The last section discusses the successes and failures of various aspects of our methodological process.

4.1 Biases and Limitations

One of our biggest concerns while progressing through the project was the validity of our collected data. We were aware that if the data collection process was biased in any way, the conclusions made from the acquired data would be invalid. As explained in the methodology, the museum designed their evaluation process specifically to reduce the effect of bias in the evaluations. However, we still found biases and limitations on the collected data that weakened our analysis of the data.

The most damaging of these limitations was small sample size. At best, only one hundred tracking studies of a specific gallery or exhibit could be collected. This number of tracking studies usually results in approximately fifty questionnaires. While enough to perform a meaningful evaluation of the exhibits, this low number of surveys and tracking studies signifies that the data is very vulnerable to variance. For example, the two heat maps in Figure 8 show the Attracting Power of Gallery 68 while Case 10 contained the “Lamb of God” and “Time is Money” exhibits. With only a single case being different while the evaluations took

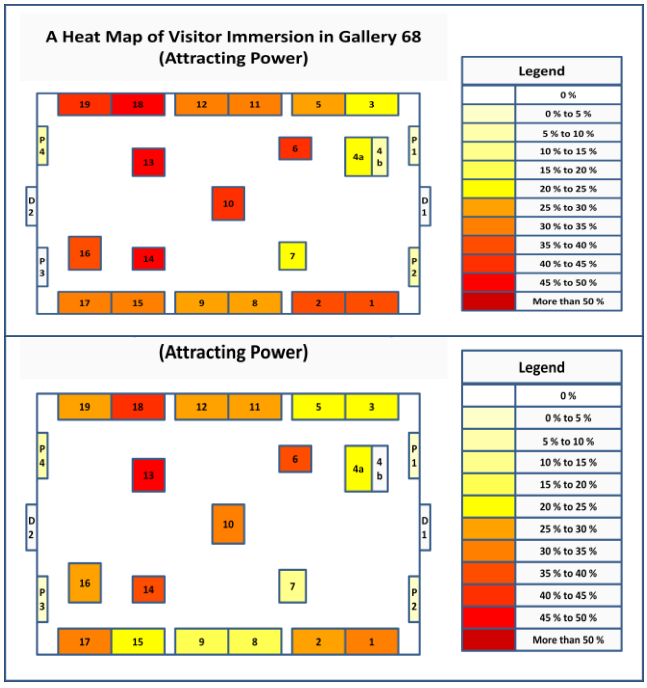

Figure 8: Attracting Power Heat Maps of the "Lamb of God" and "Time is Money" Exhibit

place, one would expect the gallery heat maps to be similar. However, these heat maps are noticeably different. Many cases exhibit a five percent loss in Attracting Power in the "Time is Money" exhibit, with Case 19 losing more than ten percent. These findings do not suggest that the data is useless, but we had to be vigilant to keep the data analysis relevant and to note that the variance in the data could be due to the low sample size and not because of the cases themselves. One of the most successful measures we took to prevent the effect of data variance on the data analysis was to compare the Case 10 exhibit with the rest of the cases in Gallery 68. While some visitors stayed longer at Case 10 than other visitors, we tracked each visitor's entire path through the gallery, which allowed us to determine how the cases compared to one another. We discuss other measures we took to reduce limitations on the validity of our data, such as choosing people in a more random fashion and collecting data at different hours of the day, in our methodology.

Furthermore, our evaluation process methodology created several biases that might have affected our data. More specifically, the non-response bias for the questionnaire survey was problematic. One of the main reasons people refused to take the survey was because they did not speak English. This was an issue because these visitors are more likely to live outside of England than those who do speak English. Similarly, those who do not speak English are more likely to be visiting the British Museum for the first time as they most like do not live in the country. We found no easy solution to these biases. As such, readers should keep these non-response biases in mind when reviewing the demographic data from our questionnaires.

4.2 The Evaluation of Case 10 in Gallery 68

Case 10 displayed two different exhibits during our evaluation of the gallery. The case contained the "Lamb of God" Exhibit until 7 July 2010. After that date, the British Art Medal Society (BAMS) medal display replaced that exhibit in Case 10. We evaluated both exhibits and their effect on Gallery 68; the following sections expound our findings.

4.2.1 The "Lamb of God" Exhibit

We performed 100 tracking studies to determine how people used the "Lamb of God" exhibit and the gallery. An additional 41 people passed through the gallery but did not make any stops. We recorded these walkthroughs without counting them as part of the one hundred people tracked. This section examines the viewing strategy and depth of engagement of visitors visiting the gallery as well as the success of the cases in Gallery 68 with a focus on Case 10.

4.2.1.1 Viewing Strategy

Viewing strategy is a measure of how visitors interact with the exhibits. By examining how long visitors look at the exhibits and their paths around the gallery, a researcher can gain a good understanding of the way a visitor interacts with the exhibit.

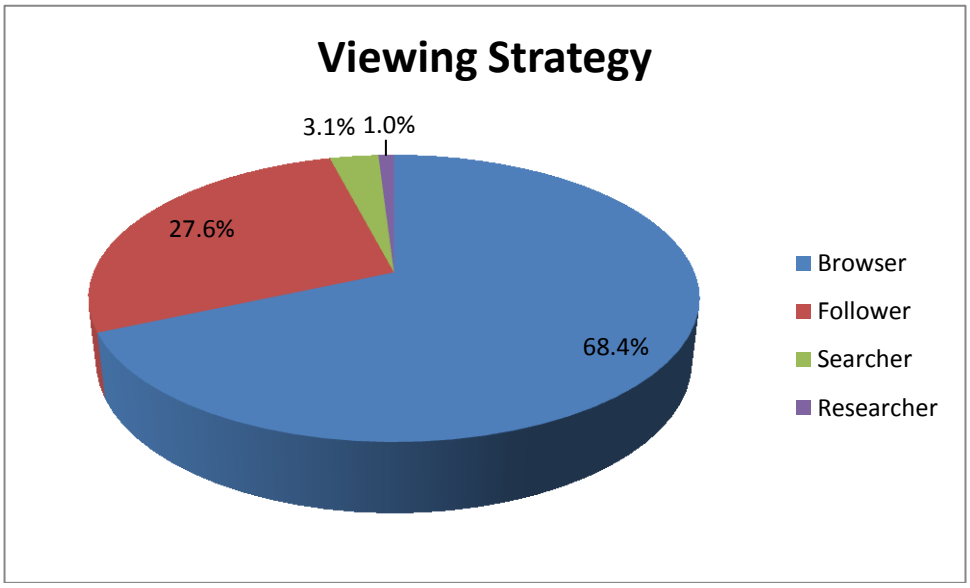

Figure 9: Viewing Strategy of Visitors from Gallery 68 "Lamb of God" Evaluation

As shown in Figure 9, Gallery 68 mainly receives browsers with 68.4% of visitors falling in that category. Furthermore, with less than 5% of people falling in the categories of Searchers and Researchers, the Gallery mainly attracts people who do not have any prior knowledge or interest in the field of numismatics. To appeal to these people, the DCM could reshape its exhibits to focus on Attracting Power rather than Holding Power to get people more interested in the subject.

4.2.1.2 Depth of Engagement

Depth of Engagement relates the strength of the interaction between the visitor and the exhibit. Researchers can determine how well a visitor interacts with an exhibit by looking at the number of stops the visitor takes in a gallery and the duration of those stops. An important feature in determining the success of a gallery is the walkthrough rate, or the percentage of visitors who walk through a gallery without stopping at any cases. The Gallery 68 tracking study of the "Lamb of God" exhibit had 41 walkthroughs for 100 people who stopped. This indicates an overall gallery walkthrough rate of 29%.

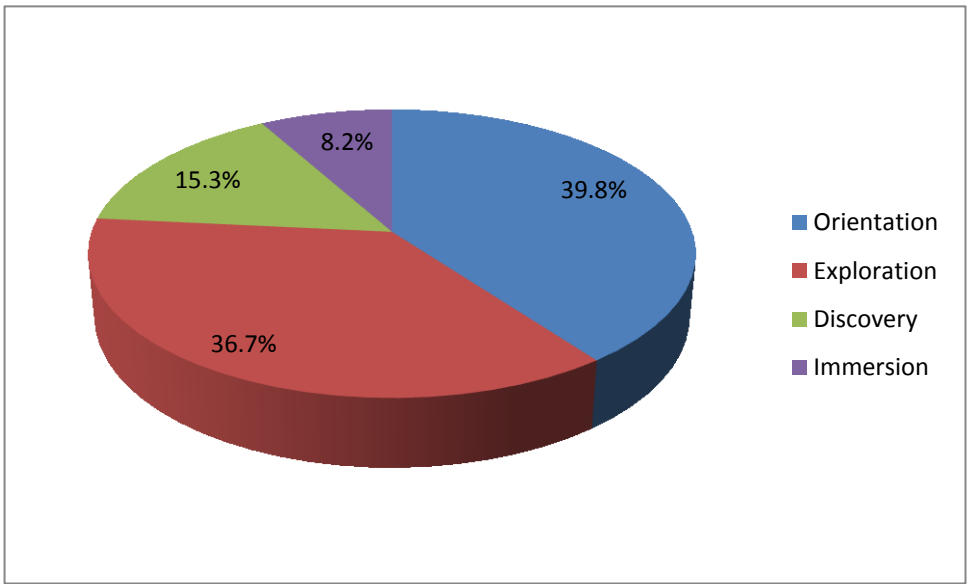

Figure 10: Depth of Engagement of Visitors from the Gallery 68 "Lamb of God" Evaluation

Of the people who did stop in the gallery, around 40% of them only interacted with cases on an Orientation level, indicating that visitors only took cursory looks through a few cases without stopping for very long. Another 37% of visitors interacted with the gallery on the Exploration level, conveying that visitors stayed a short amount of time at a few cases to learn something, but not long enough to acquire considerable knowledge. The last two levels of Engagement, Discovery and Immersion, made up for the remaining 23% of visitors. These visitors stayed for a moderate to great amount of time (more than ten seconds) at several cases, interacting and learning something from these cases.

4.2.1.3 Heat Maps

We created heat maps from the tracking study data of Gallery 68 to gain a better understanding of which exhibits were successful. The following heat maps examine the Attracting Power and Holding Power of the cases in the gallery. We calculated the Attracting Power of the cases by determining the percentage of people who looked at each case. Similarly, we calculated the Holding Power of cases by dividing the number of people who stayed at each case for more than 10 seconds by the total number of people who looked at that case.

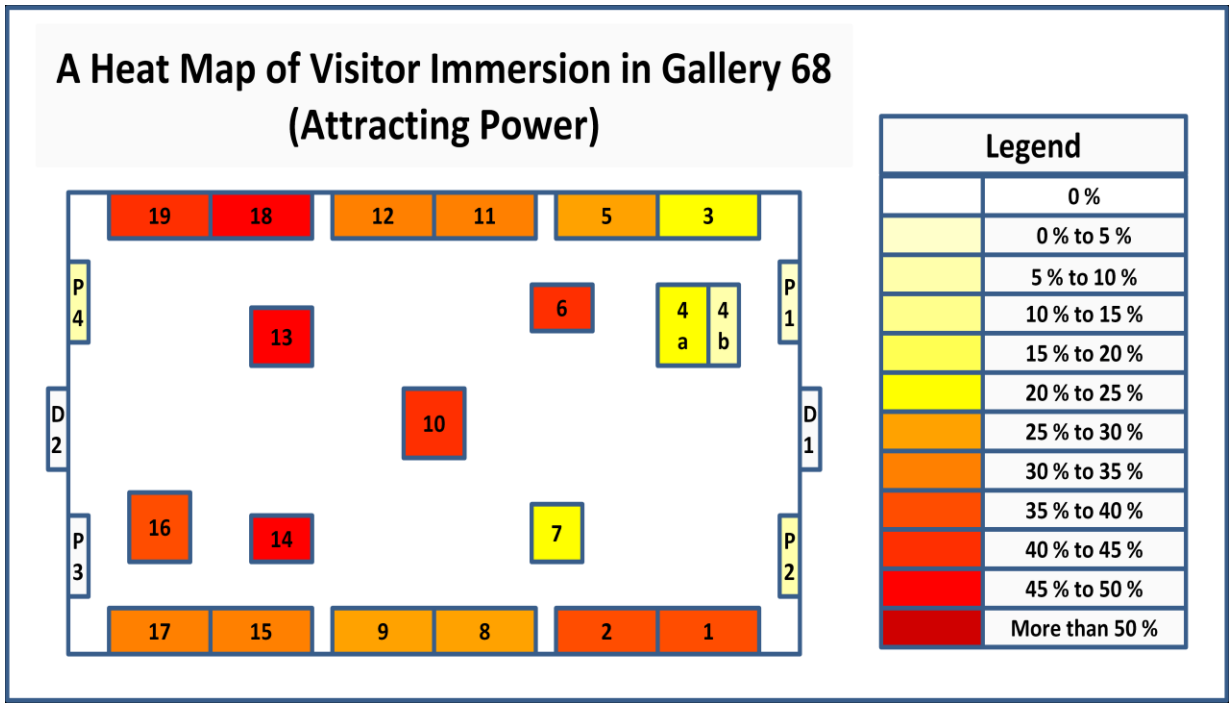

Figure 11: Heat Map of Attracting Power from the Gallery 68 "Lamb of God" Evaluation

As can be seen in the Figure 11, the most successful cases in terms of Attracting Power are the cases surrounding the doors and several of the middle cases, which contain larger objects. Case 18, 19, 13, and 14 had the highest Attracting Powers in the room, with walkthrough rates of less than 55%. Case 10 had an Attracting Power of 40%, meaning forty percent of people passing the case glanced at it or stopped to look at it. The top right cases on the map had the lowest Attracting Power in the room; Cases 3 and 4 had Attracting Powers between 20% and 25%. Case 4b appeared to have a very low percent, but this is because the case had recently changed into the two sides that appear in Figure 11 now. As such, we could not rely on this figure to provide reliable Attracting

Power for this case. While the cases all seem to have reasonably high Attracting Powers, the panels all seem to have Attracting Power of less than 5%.

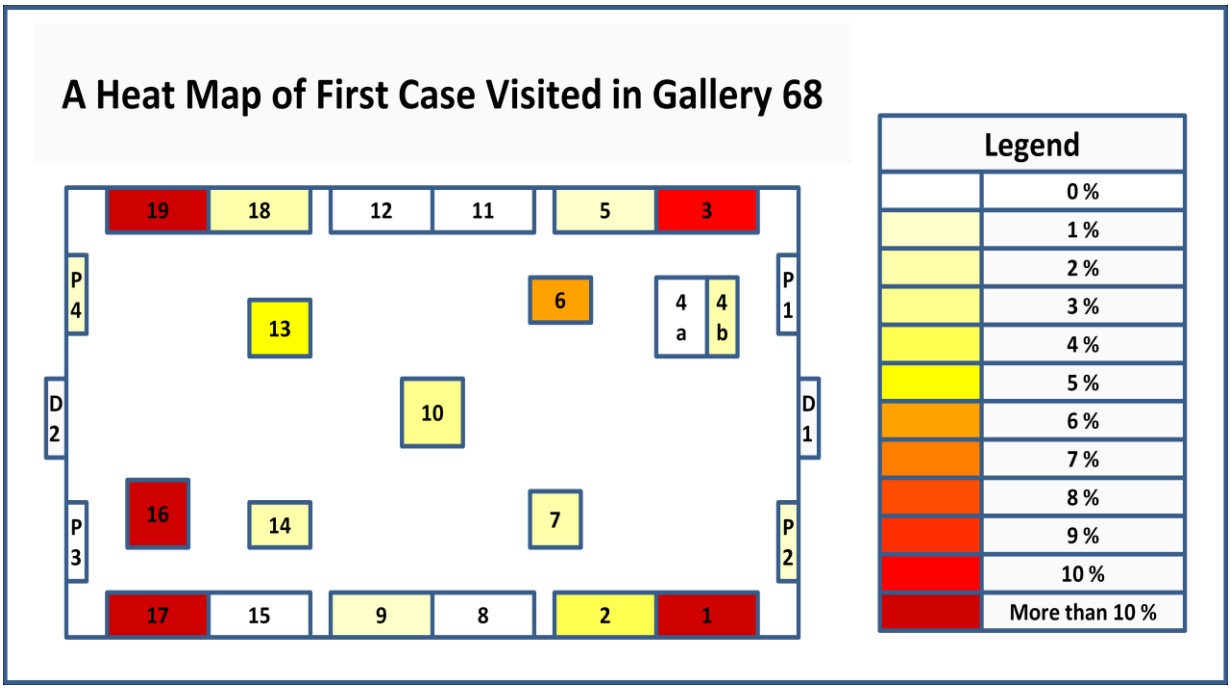

Figure 12: Heat Map of First Case Visited from the Gallery 68 "Lamb of God" Evaluation

We also measured which cases received the most first visits. This measurement is another gauge of Attracting Power as it determines which cases are successful in getting people to stop walking through the gallery. The cases nearest to the doors had the highest number of first visits (see Figure 12). Cases 1, 3, 17, 16, and 19 all had 10% or more of the first visits in the Gallery. In contrast, Cases 6 and 13, although not near the doors, also had relatively high first visit count (6% and 5%, respectively). Case 10 also had a rather low first visit count with 3%, but it is also the furthest away from both doors.

We then measured exhibit success in terms of Holding Power, which yielded completely different results than Attracting Power (see Figure 13).

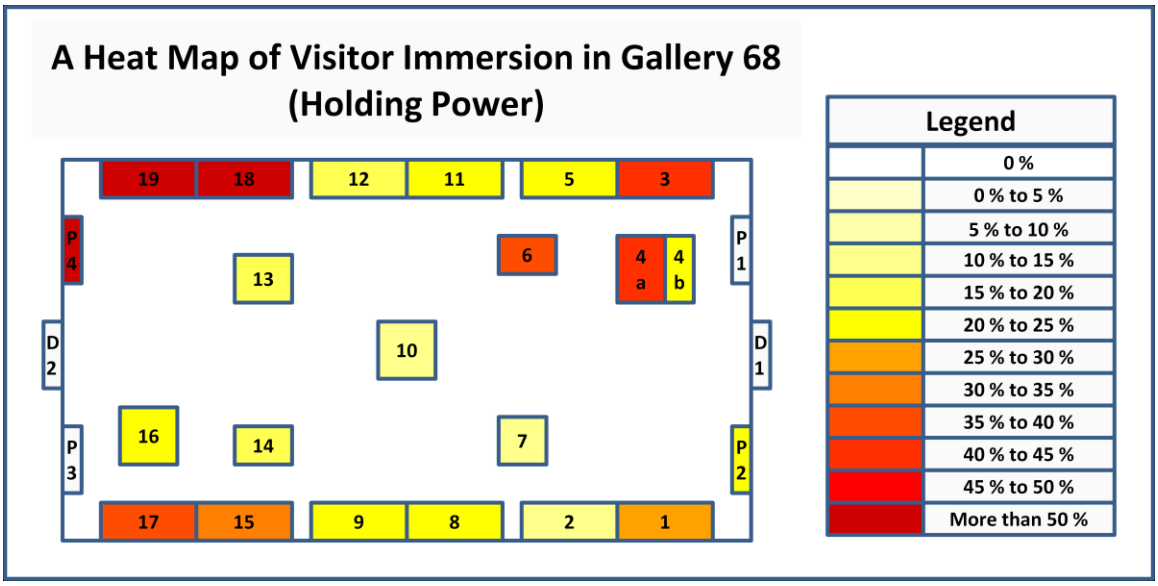

Figure 13: Heat Map of Holding Power from Gallery 68 "Lamb of God" Evaluation

Panel 4, Case 18, and 19 appeared to be the most successful displays; over 50% of people who visited the cases stayed for more than 10 seconds. The Panel 4 data was not very reliable, however, because its low Attracting Power meant that only one or two people actually stopped at it. As a result, the Holding Power shown here could be far off from the accurate Holding Power of the Case. In terms of Attracting Power, Case 10 was less successful than the rest of the gallery, since only 10% to 15% of people who stopped there stayed for more than 10 seconds.

Our heat maps suggested that Case 10 was very successful in terms of Attracting Power, as 40% of visitors looked at it. However, the heat maps also revealed that the Case had a lower Holding Power than the average of the gallery, with less than 15% Holding Power.

4.2.2 The BAMS 2010 Exhibit

After the collection of the hundred tracking studies of the "Lamb of God" exhibit, the DCM replaced Case 10 with a new exhibit. The new exhibit featured medals from the British Art Medal Society's annual medal competition (BAMS). The following section analyses the results from the Gallery 68 BAMS evaluation, compared to the "Time is Money" display.

4.2.2.1 Viewing Strategy

We expected to see a very similar distribution of viewing strategies for the Gallery 68 BAMS evaluation data as we saw for the "Lamb of God" exhibit. We found that the new viewing strategy distribution of viewing strategy, despite some differences, did show a similar pattern.

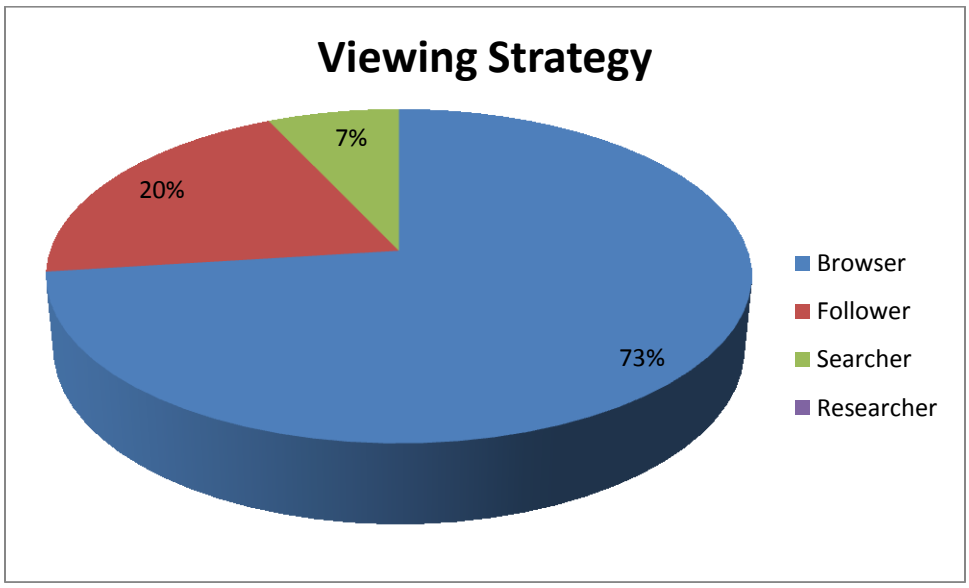

Figure 14: Viewing Strategy from the Gallery 68 BAMS Evaluation

As seen in Figure 14, there were only a few more Browsers than in the "Time is Money" evaluation, from 68% to 73%. However, there were no Researchers at all, causing a large increase in Searchers to compensate for the space previously taken by Researchers (from 3% to 7%). In accordance, the percentage of followers decreased, from 28% to 20%.

The distribution in Figure 14 reinforces the fact that Gallery 68 attracts mainly people who are just passing by. As in section 4.2.1.1, we tracked very few Searchers or Researchers in the gallery. This low percentage suggests that the gallery functions to attract the attention of people less knowledgeable on the subject of coins and medals. We determined that the changes in the distribution, namely the decrease in Followers and increase in Browsers and Searchers, were statistically significant changes because of the small sample size of our evaluation.

4.1.2.2 Depth of Engagement

We expected the depth of engagement graphs of the two Gallery 68 evaluations to have very similar distributions, despite some variance differences due to the small sample size. As expected, the two distributions were almost identical.

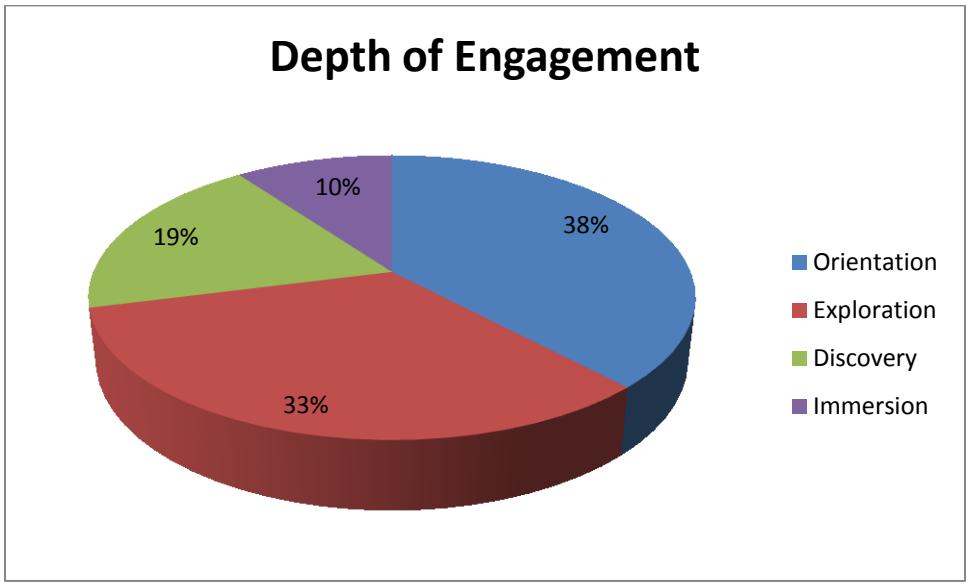

Figure 15: Depth of Engagement from the Gallery 68 BAMS Evaluation

The pie chart shown in Figure 15 revealed a distribution very similar to the depth of engagement distribution of Gallery 68 "Lamb of God" evaluation. The main difference came from a 4 % decrease in Exploration visitors and a 2% decrease in Orientation visitors. This decrease resulted in an increase in Discovery and Immersion visitors, showing that visitors engaged more profoundly with the exhibits. However, as discussed in section 4.2.2.3, this difference does not come from the BAMS exhibit change since it performs very similarly to the "Lamb of God" exhibit. The best explanation for this event is the variance created by the small sample size of visitors and the different types of people who visited the exhibit while the evaluations took place.

Walkthrough percentage is another important characteristic affecting visitor engagement. The walkthrough percentage for the Gallery 68 BAMS evaluation was 27.5%. In other words, 38 walkthroughs occurred during the amount of time it took for 100 people to stop at one or more cases.

4.2.2.3 Heat Maps

Like the Gallery 68 "Lamb of God" evaluation, the Gallery 68 BAMS evaluation data was analysed using heat maps to represent the cases' Attracting Power and Holding Power. Section 4.2.1.3 discussed the calculations involved with finding the Attracting Power and Holding Power of cases. Here are the results of our analysis of the Gallery 68 BAMS evaluation.

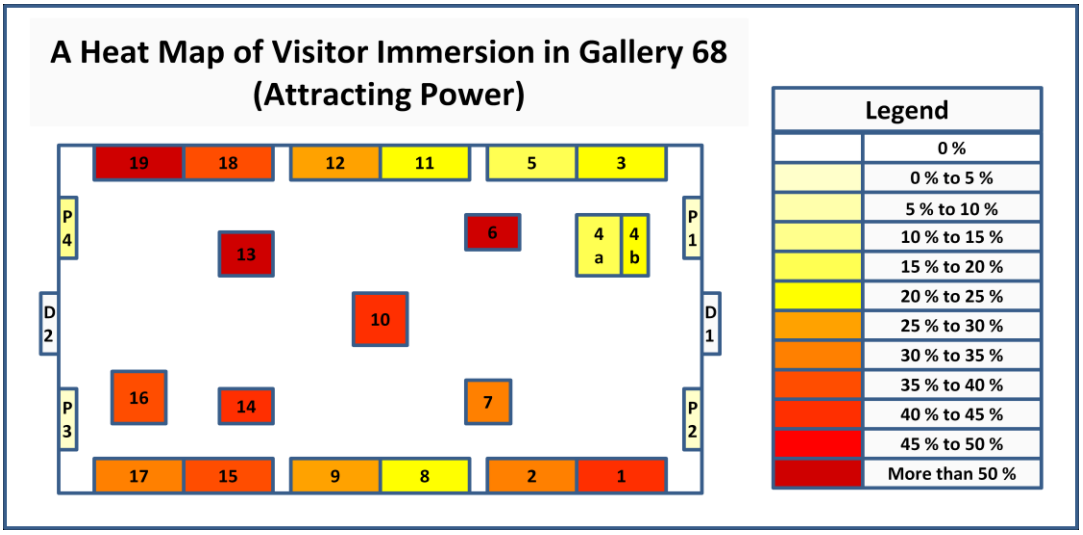

Figure 16: Heat Map of Attracting Power from Gallery 68 BAMS Evaluation

The BAMS evaluation displayed a larger range of Attracting Powers than previous evaluations. Figure 16 shows that the cases went from 10% Attracting Power up to more than 50% with the average Attracting Power around 25% to 30%. Case 10 was above average in Attracting Power, with 40% to 45% percent Attracting Power. This was due to the central position of the Case and the nature of the objects in the case. Case 10 contained medals of many different shapes and colours. These medals function to grab the attention of visitors, but do not hold their attention effectively. We found that Cases 6, 13 and 19 were the most powerful cases in the Gallery 68 in terms of Attracting Power while BAMS was on display, with percentages of over 50%. These results mimicked our Gallery 68 Attracting Power results during the "Lamb of God" display.

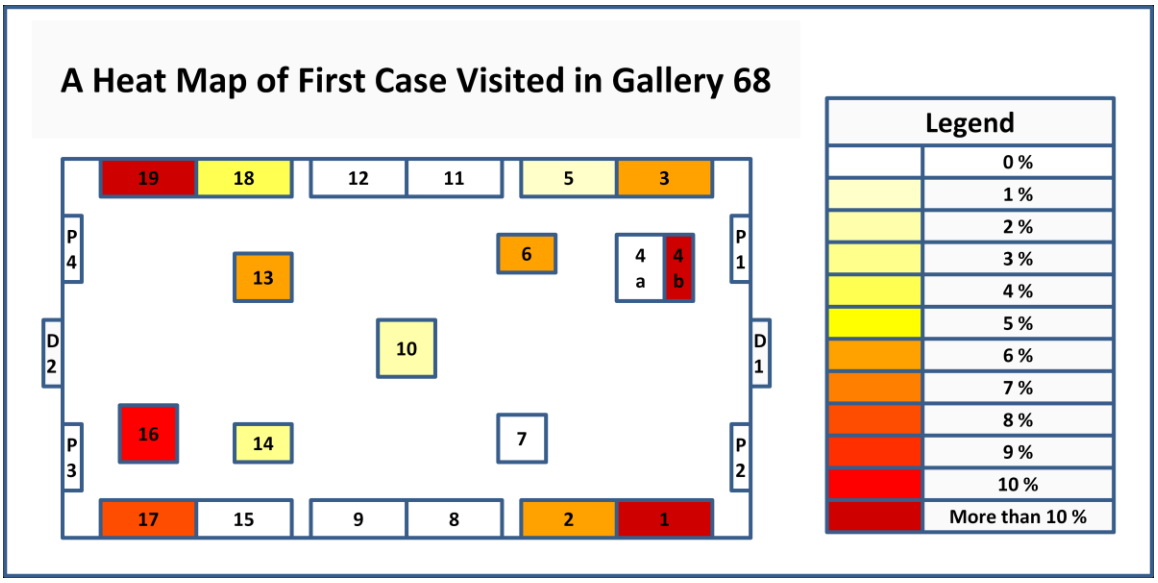

Figure 17: Heat Map of First Case Visited from Gallery 68 BAMS Evaluation

To get a better understanding of which cases act as gateways into the rest of the exhibit, we examined which case visitors stop at first. As expected, Figure 17 shows that many of those gateway cases were near the doors. Cases 1, 4b, 17, and 19 had the highest percentage of first case visits. Some of the middle cases, specifically Case 6 and 10, also had some success at getting visitors to stop first. First stops were an important measure of Attracting Power because it revealed cases that could grab the attention of visitors better than cases they had previously passed. Case 6 tended to attract people because of the giant golden coin that it contained, while Case 10 attracted people because of its central placement and interesting-shaped objects.

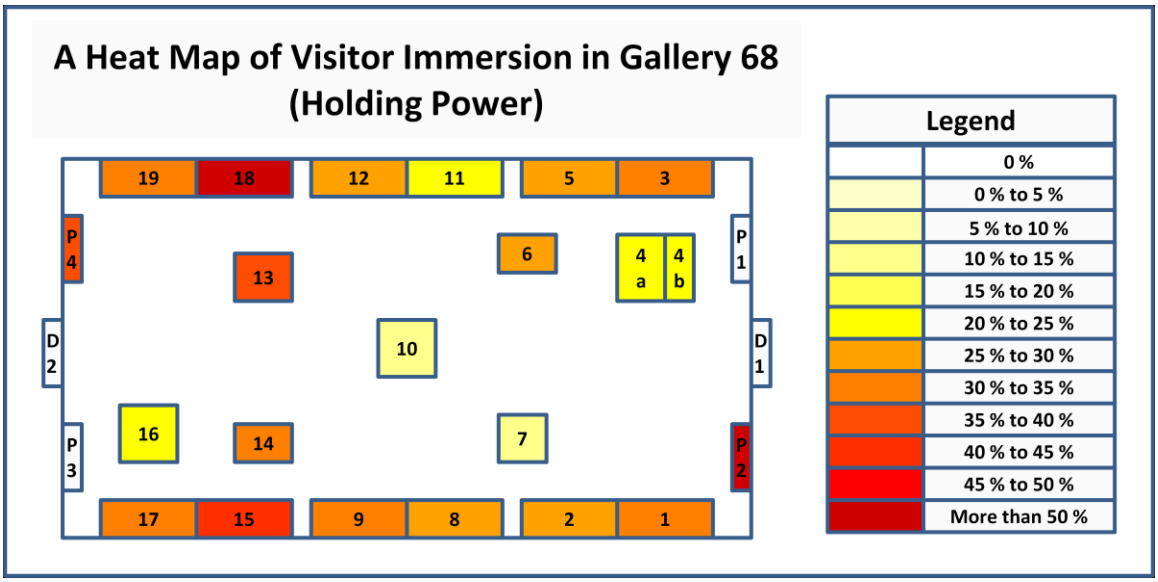

Figure 18: Heat Map of Holding Power from Gallery 68 BAMS Evaluation

The Holding Power heat map, as seen in Figure 18, told a different story on the success of Case 10. At 10% to 15% Holding Power, Case 10 had one of the lowest Holding Powers in the entire gallery. As previously demonstrated, Case 10 had a high Attracting Power, meaning it could get visitors to come to the case. However, the case could not get visitors to stay and learn. The gallery as a whole had an average of 25% to 30% Attracting Power, and Case 18 had the highest Attracting Power with more than 50%.

4.2.3 General Comparison of Case 10 Exhibits

In Section 4.1, we discussed the risks associated with comparing the data from different Case 10 evaluations. Small sample sizes and visitor patterns concerning times of day encouraged these risks. We made every effort to administer surveys at as many different hours during the day as possible. The differences in heat maps of the two last evaluations showed that these efforts were not as effective as we had hoped. However, comparing the data from different Case 10 can still be a strong way of judging how successful a specific Case 10 exhibit was as long as the conclusions encompass the limitations created by that variance.

As such, we used SPSS and Excel to analyse the tracking study data from past evaluations of exhibits. In the last year, Case 10 has housed six different exhibits. These are, in chronological order, the "Time is Money" exhibit, the "Matthew Boulton" exhibit, the BAMS 2009 exhibit, the North India (Persian) exhibit, the "Lamb of God" exhibit, and the BAMS 2010 exhibit.

All four exhibits in Case 10 displayed a very high walkthrough percentage (see Figure 19) suggesting that many people did not even glance at Case 10. Of all the exhibits displayed in Figure 19, the BAMS 2009 and BAMS 2010 exhibits had the most Attracting Power, or ability of a case to attract visitors. Both of these exhibits had a walkthrough percentage of less than 60% as well as higher overall percentages for levels of engagement (L1, L2, L3 and L4) than the other three exhibits. The "Lamb of God" exhibit was the most successful of the thematic Case 10 exhibits in terms of Attracting Power with a walkthrough percentage around 60%. All of the other cases had walkthrough percentages above 60%, and the "Matthew Boulton" exhibit had the worst walkthrough percentage. The notations used in the graphs in this section are the following: Anyone who glanced at an exhibit without stopping was an L1. Stopping for one to ten seconds was an L2. An L3 defined a visitor who stayed at a case from ten to forty seconds. Finally, L4 signified that a visitor stayed at a case for more than forty seconds.

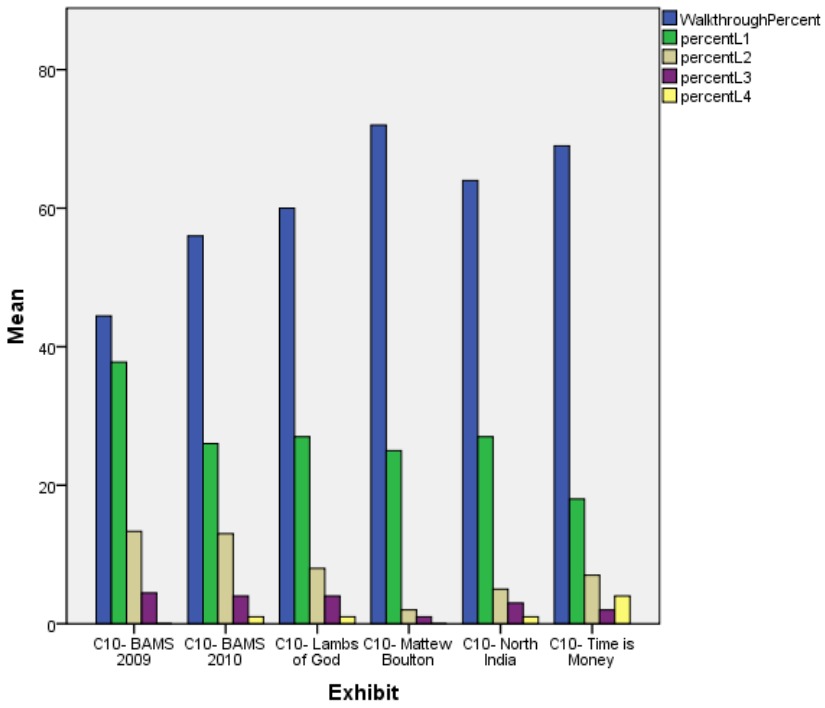

Figure 19: Clustered Bar Graph of Visitor Immersion

Holding Power tells a different story. The Holding Power of a case is its ability to keep people interested in the case once they have been attracted. Once again, the "Matthew Boulton" exhibit had the least Holding Power, with just over 10% of its visitors staying at the case for more than a glance (see Figure 20). The "Time is Money" exhibit was the most successful in terms of Holding Power. Ten percent of its viewers stayed for more than 40 seconds and more than 40% of visitors stayed for longer than a quick glance. The BAMS 2010 and "Lamb of God" exhibits were both close to the "Time is Money" exhibit in terms of Holding Power. The BAMS 2010 exhibit also had a small numbers of L1s when compared with the other exhibits, but had a large number of L2s and only a few L4s when the "Time is Money" had ten percent of its visitors staying there for more than 40 seconds. The "Lamb of God" exhibit had more L1s than the BAMS 2010 exhibit, but had fewer L2s as well while having more L3s and L4s.

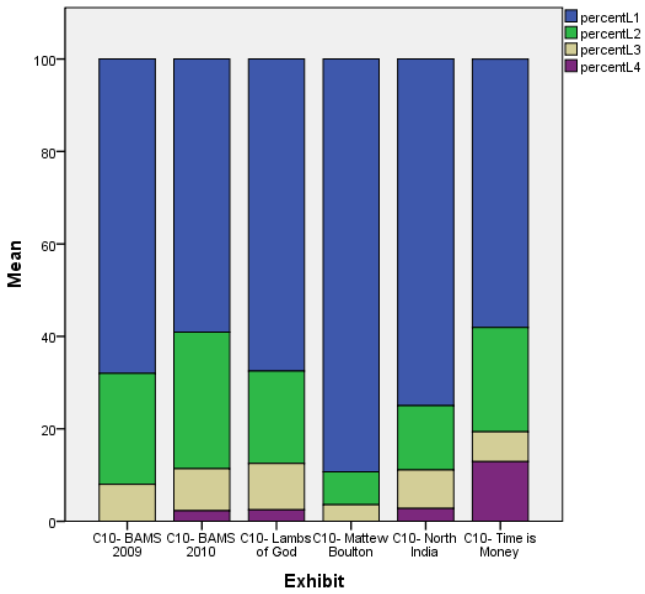

Figure 20: Stacked Bar Graph of Visitor Immersion

Overall, the BAMS 2010 and "Lamb of God" exhibits performed very positively when compared with the exhibits in the past year. The BAMS 2010 was more successful than the BAMS 2009 in Holding Power and similarly successful in Attracting Power, having more walkthroughs, but less L1s and more L4s. The "Lamb of God" exhibit was the most successful thematic exhibit in Case 10 in terms of Attracting Power, with fewer walkthroughs and more people staying at the case for several seconds. Although the design of the case lended to a high Attracting Power, it still had a relatively high Holding Power when compared with the other Case 10 exhibits.

4.3 The Evaluation of Case 3 in Gallery 68

We should first denote that we were only able to record 15 surveys during the limited period we had to evaluate Case 3. This means that any data that we discuss in this paper might not be statistically significant.

The visitor demographics or Case 3 of Gallery 68 had very similar demographics to the rest of the gallery. A large number of visitors from English speaking countries spoke English as their primary language, and the remaining visitors from a number of other locations around the world spoke various other languages. The majority of the surveyed population was males, mirroring the fact that more males enter the Money Gallery.

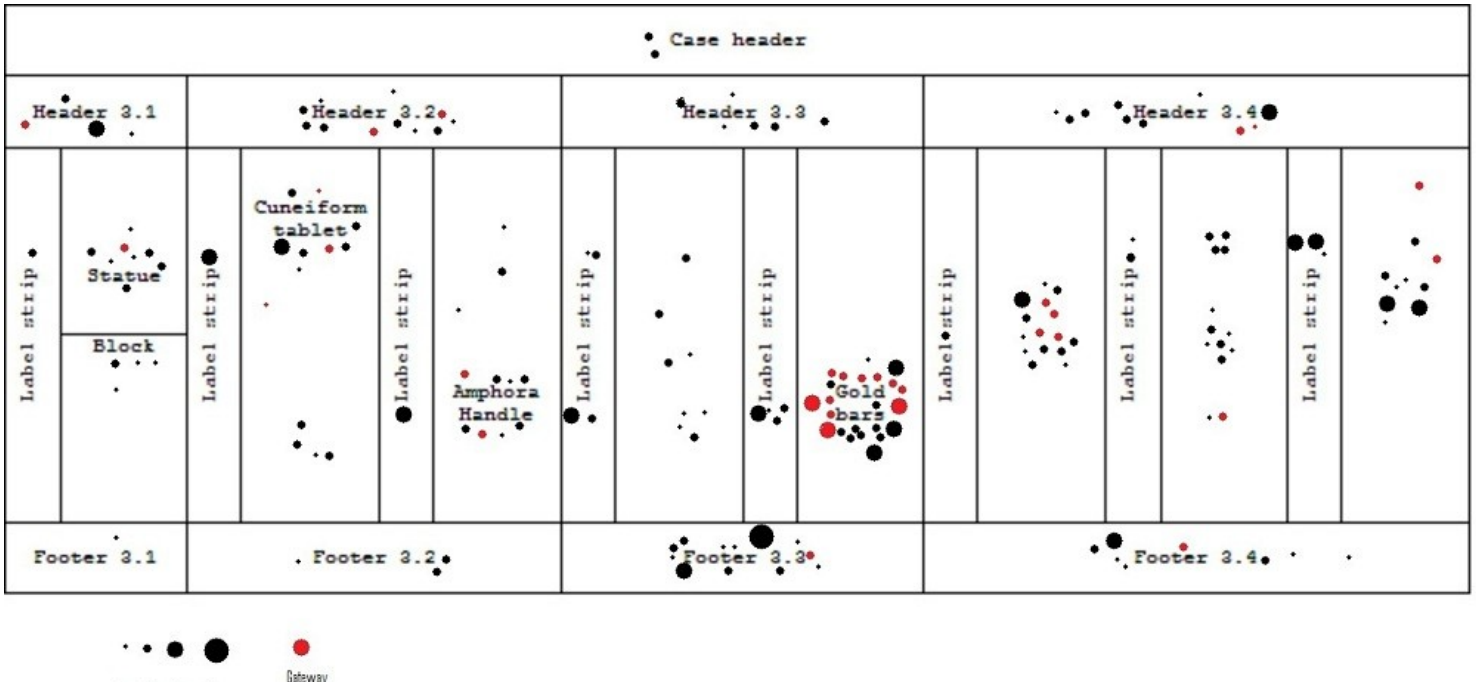

Figure 21: Map of Visitor Immersion in the New Case 3 Exhibit

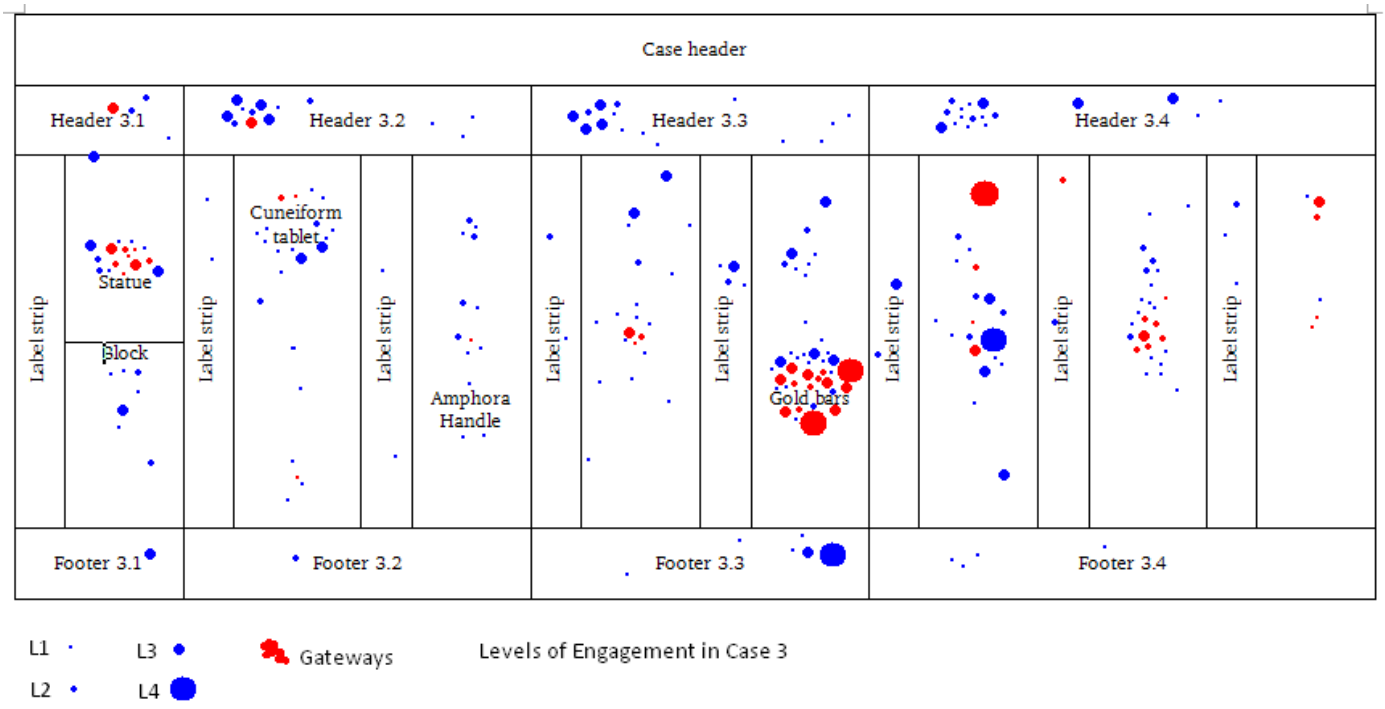

Figure 22: Map of Visitor Immersion in the Old Case 3 Exhibit

We found several areas of interest for visitors in Case 3 (see Figure 21). For example, the gold bars in the middle of the display were a popular artifact in the case. Our method of tracking was not perfect, however, since it was near impossible to know what visitors are actually looking at. However, we could discern that several characteristics made artifacts more appealing to visitors, like larger, more detailed items. The map from last years' evaluation (Figure 22) supports our statement as well. The new changes to Case 3 involved major changes in reading material, with little change to location and amount of items. Figure 21 suggests that while possibly having an effect on the amount of information a visitor takes away from the case, a change in reading material does not necessarily have an effect on which items will draw the most attention.

In the survey, we asked a terminology question, querying if visitors knew what the term "tetradrachm" meant (an ancient Greek coin with a value of four drachmae). Most visitors did not know and were not willing to take a guess. There were a few, however, who were able to deduce that it was some kind of Ancient Greek coin, primarily because they were standing in a section of the gallery that discussed Ancient Greek money. Nevertheless, they were still not able to determine the exact definition of a

tetradrachm. Also in the questionnaire was a question asking visitors what they believed was the theme of Case 3. Figure 23 shows a word cloud created from the answers to this question. This image shows the more frequently used words in a larger font.

Figure 23: Word Cloud of the Themes in Case 3

Another important question in our questionnaire was one asking visitors which of two panels they preferred. The first (top) one was the original panel from the old Case 3, displaying a rather large amount of text crammed into the space, and the second (bottom) one displayed less text and less information and was from the new Case 3. Visitors had very split opinions about the two panels. The consensus was that the top panel was good for visitors who were willing to take the time to read the panels. It displayed a lot of information that appealed to people who had the time to read a lot of information. However, the bottom panel appealed to visitors who just wanted the facts about an item. Those visitors were generally younger, and were not interested in spending a lot of time reading text.

4.4 The Evaluation of Gallery 69a

We performed an evaluation on Gallery 69a in a similar fashion to the Gallery 68 evaluation. We used tracking studies and surveys to gather data on how visitors used the Gallery and what they learned and experienced from their visit. Unlike Gallery 68, the Gallery 69a evaluation examined the success of the entire exhibit instead of focusing on specific cases. Our findings from the analysis of this data are below.

4.4.1 Findings on the Tracking Study Data

The data collected from the Tracking Study allowed us to do a similar analysis of the Case 10 tracking study analysis shown above. The following paragraphs summarize our analyses of visitor viewing strategy and exhibit success in terms of Attracting Power and Holding Power.

4.4.1.1 Visitor Strategy

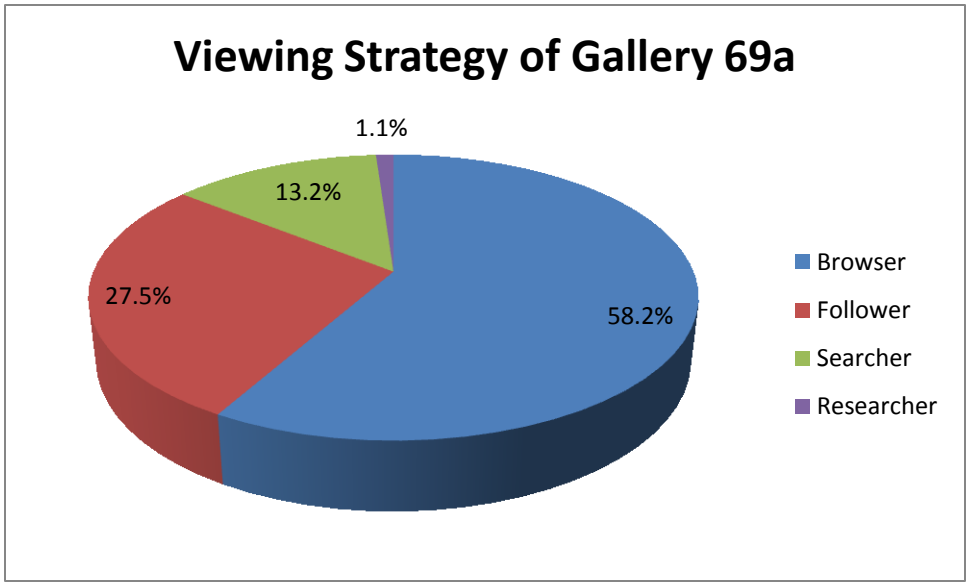

Figure 24: Viewing Strategy of Gallery 69a

We found that 58% of the visitors of Gallery 69a fell into the Browser category (see Figure 24). Another 28% of visitors fell into the Follower category. This meant that almost 15% of people who visited Gallery 69a were Searchers or Researchers, with previous knowledge or interest in the field.

4.4.1.2 Heat Maps

We used heat maps to determine the success of cases and the exhibit as a whole in terms of Attracting and Holding Power. In order to examine a case's Attracting Power, we examined the percentage of people who looked or stopped at each case as well as which case received the most visitors. We calculated Holding Power by determining the percentage of people who looked at a case and stayed for more than 10 seconds. The following sections outline our findings from that analysis.

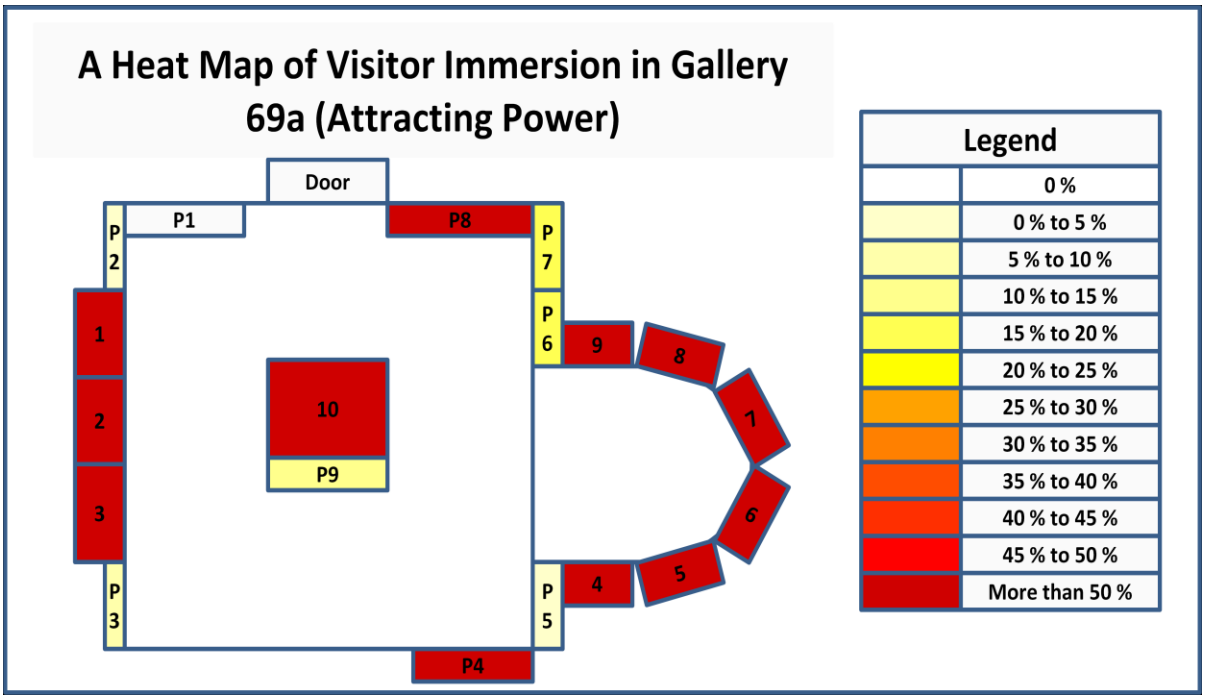

Figure 25: Heat Map of Attracting Power in Gallery 69a

Many of the cases and panels in Gallery 69a had a very high Attracting Power (see Figure 25) All of the cases in the exhibit had at least 50% Attracting Power and several of the panels did too, particularly Panel 8 and Panel 4. These panels had the highest Attracting Power of all of the exhibits in the Gallery with an Attracting Power of 82%. Figure 19 demonstrates that the Gallery 69a as a whole had high Attracting Power and more than half of the exhibits had a less than 50% walkthrough rate.

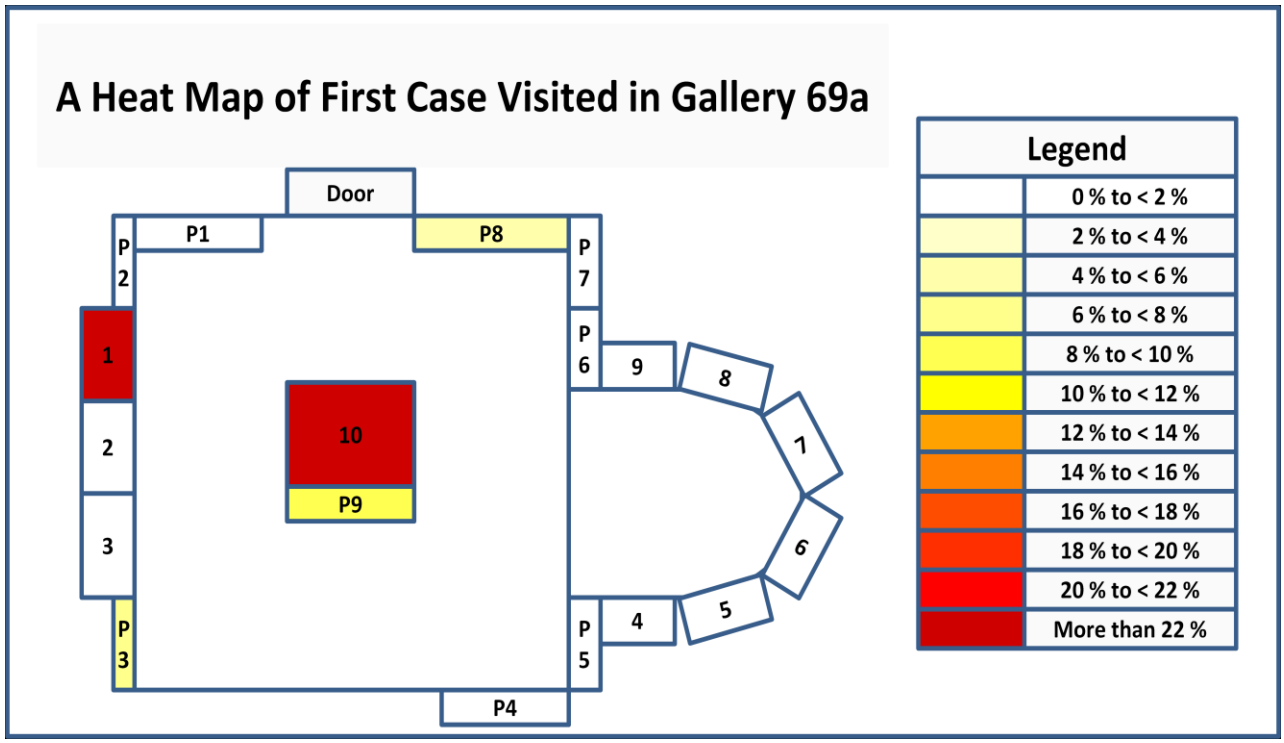

Figure 26: Heat map of First Case Visited

On the other hand, the first case visited heat map shows that although most cases in the gallery had high Attracting Power, only a few of them had many first visits (see Figure 26). Case 1 and 10 both had very high first case visited percentages, 23% and 50% respectively, while most of the other cases had low first case percentages. Cases 1 and 10 were located closest to the doors and were the first cases visitors noticed when coming in.

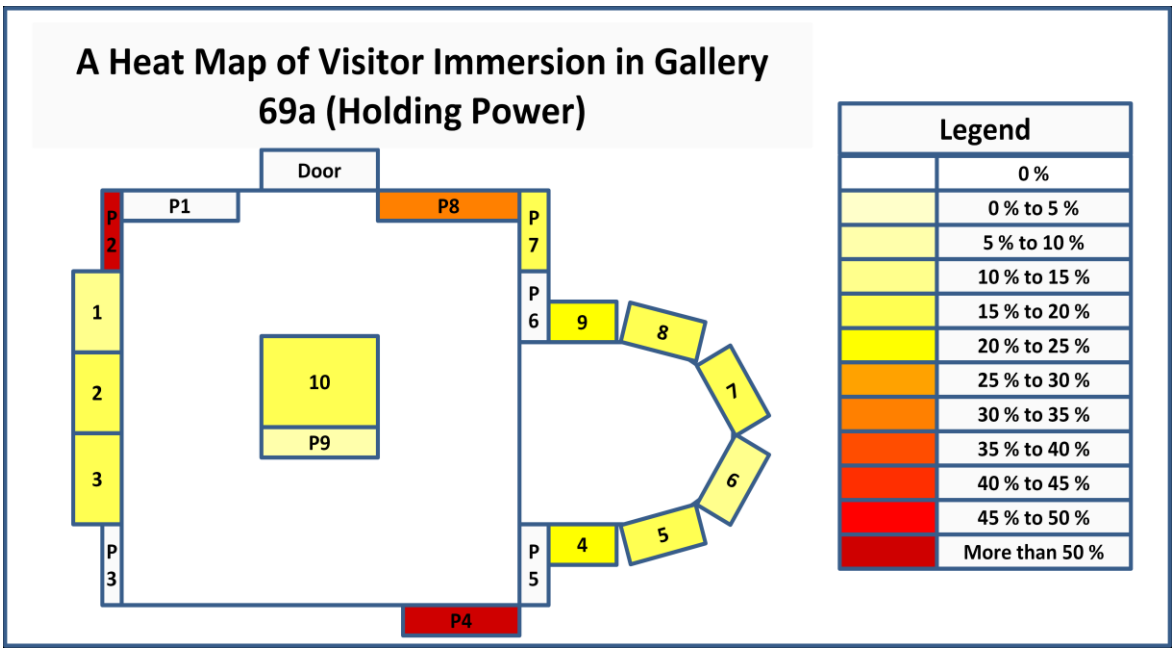

Figure 27: Heat Map of Holding Power in Gallery 69a

The Holding Power of cases in Gallery 69a was a lot lower than their Attracting Power (see Figure 27). Most of the cases in the gallery yielded around 10% to 25% Holding Power with only a few panels above that range. Panel 2 demonstrated a very high Holding Power because of its very low Attracting Power; this caused its Holding Power to be more susceptible to variation. As a result, the Panel 2 Holding Power is not valid and more studies are necessary to determine its true Holding Power. On the other hand, Panel 8 and 4 have high enough Attracting Power to make their high Holding Power believable. As such, these two had the highest Holding Power in the Gallery, with 34% and 51%, respectively.

4.4.2 Surveys

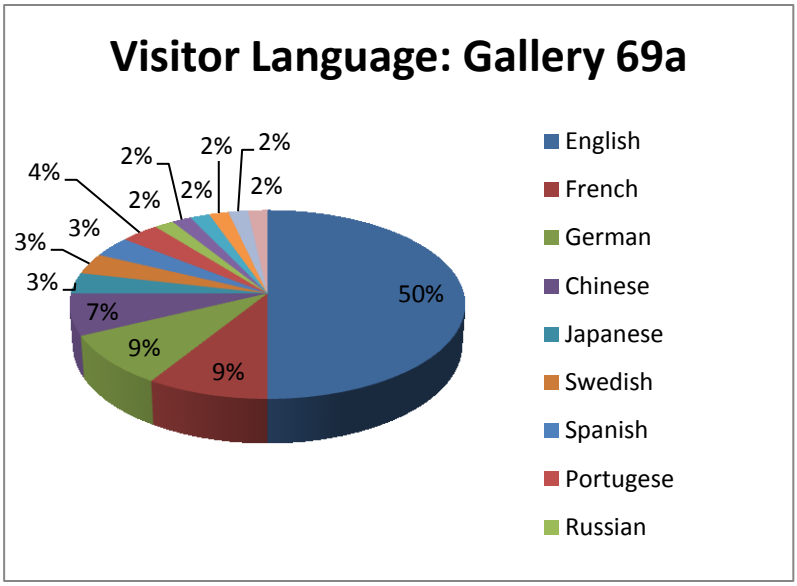

Figure 29: Visitor Language for Gallery 69a

The visitor demographics varied for Gallery 69a. In terms of gender, the majority of visitors were male, topping out at about 60% of visitors surveyed. While a large number of women visited the gallery, males usually accompanied them and answered our questionnaire when surveyed. As for visitor languages, visitors represented a large number of different primary languages. By far, the largest group was English speakers at 50%, followed by French and German at 9% each, and Chinese at 7%. There were about 10 other languages represented by visitors, each 2% or less of the population surveyed. Additionally, visitor nationalities varied greatly. The largest group was visitors from England, representing 21% of the surveyed population. The rest of the UK represented 18%, the US at 14% and France and Germany were at 5% each. There were 17 other populations represented at less than 5% each. Figures 28 and 29 display both of those demographic distributions.

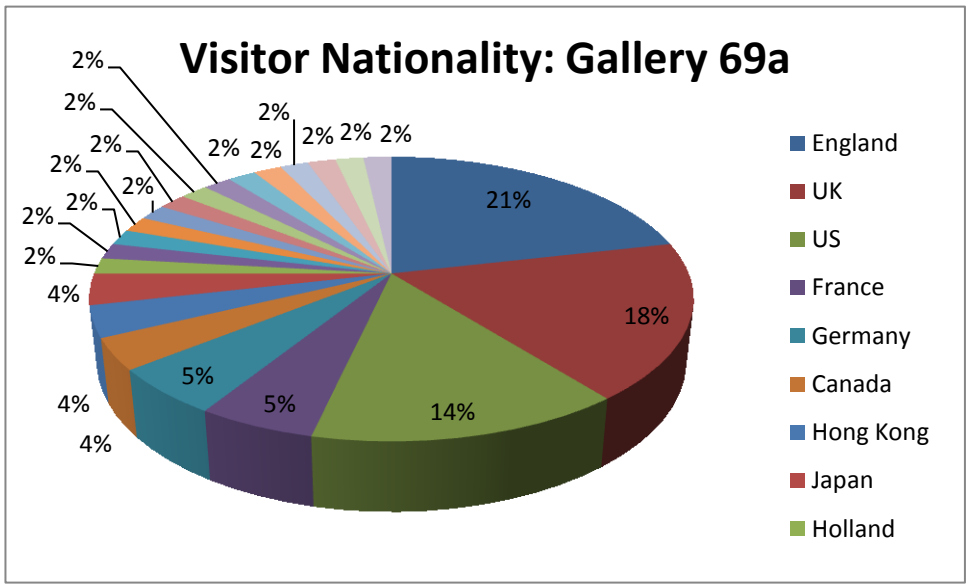

Figure 28: Visitor Nationality of Gallery 69a

We classified visitors with use of the responses we received to specific survey questions. These questions concerned their motivation for coming to the museum and what they feel they got out of the exhibit that they visited. We classified visitors into four different motivational groups: social, intellectual, emotional, and spiritual. Figure 30 depicts the comparison of the types of visitors based on their motivation for coming to the museum as well as what they got out of the exhibit.

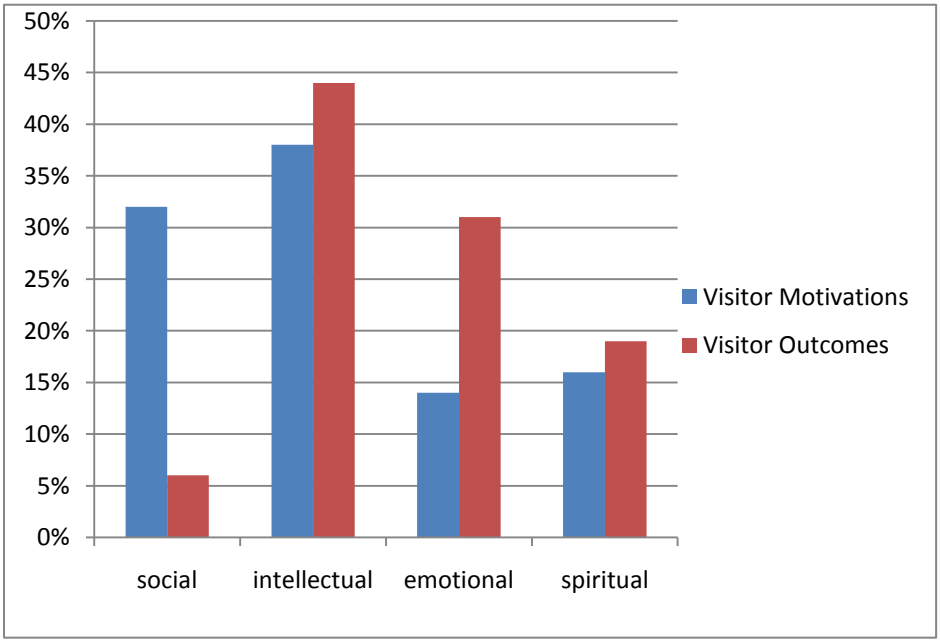

Figure 30: Visitor Motivation and Outcomes of Gallery 69a

However, this graph is not accurate as there is one fault in the questionnaire process. After the question that pertained to the visitors' reason for attending the museum, another question asked what their primary reason was. This reason was the choice that we used in their visitor motivation classification. There was no such question after the question pertaining to the visitors experience inside the exhibit. Therefore, the data and the comparison made from it are inaccurate.

Several of the questions asked were specific to the exhibit and the gallery. One of these questions determined visitor motivation for coming into the Gallery by asking whether the visitor wandered into the gallery or intended to see it. Of the 56 visitors that answered the questionnaire, only seven said they had intended on seeing that exhibit specifically. Of all the exhibits in the gallery, the Zimbabwe poster seemed to intrigue the most people. The vast majority of people noted that the "Zimbabwe Poster", which showed a political statement about the hyperinflation, was an item that struck them. Many visitors were very intrigued by this particular situation in Africa and spent most of their time in the exhibit reading the information accompanying the poster. When we asked visitors "What impression of Africa did you get from the exhibit?" we received several different responses. The word cloud in Figure 31 shows the various responses

people gave to this question, with the size of the word representing how many visitors used it. We also used word clouds (see Figure 32) for the question "Did you see one or more general themes of the gallery?"

After reviewing our tracking studies and questionnaire results, we believe that Gallery 69a was successful. Most cases had a high Attracting Power, and a moderate Holding Power, as compared to Gallery 68. The amount of material displayed in Gallery 69a was much less than that of Gallery 68. This made Gallery 69a appear more successful, since visitors did not have to spend as much time at each case and still learned from the material in the cases. Additionally, Panel 4 of Gallery 69a had an extremely high Holding Power, as it housed the Zimbabwe poster, which was a rather unusual and intriguing item. The responses from the surveys suggested that visitors were able to pick up enough knowledge to say they had learnt something new that would stay with them or at least enough to spark their interest to keep investigating.

Figure 31: Word Cloud for impressions of Africa

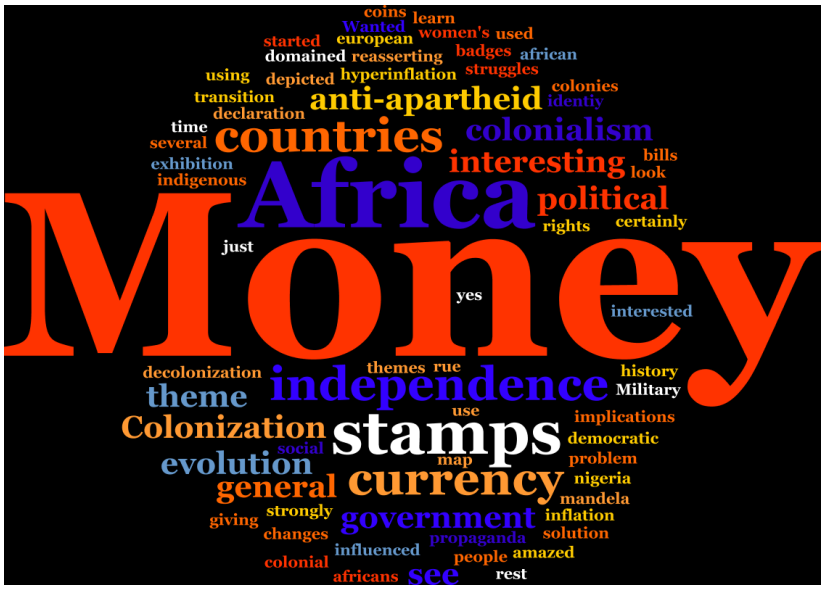

Figure 32: Word cloud for general themes of Gallery 69a

4.5 Comparison of Demographic Information

In an effort to make the evaluation process faster and more efficient, we examined demographic information from DCM surveys to establish whether it was necessary to

continue collecting on the survey. The idea was that if the DCM's demographics were similar enough to the general British Museum demographics, then we could logically remove those questions from the survey to make the evaluation process faster and easier. We found that the easiest characteristic of the demographic information to analyse was visitor age, since it was numeric data while most of the rest of the data was not. To do this analysis, we performed a paired twin tailed t-test using SPSS, a statistical analysis software. This test generates the probability that two samples come from the same distribution. If the resulting p-value is below 5%, then we can determine that the two samples are not from the same distribution. Two samples cannot be determined to have the same distributions by a set p-value, however, but if it is above 50%, then it is safe to say that the response bias is small enough that they are essentially from the same distribution.

We found that Gallery 68 had high p-values for all of the British Museum data when compared to the DCM demographics in terms of visitor age. The p-values of the "Time is Money" exhibit evaluation ranged from .544 to .854. These values would suggest that the department could remove questions about demographics from the survey for Gallery 68. However, we were able to collect only a small amount of data for the "Time is Money" evaluation (41 questionnaires). This lack of data puts the validity of our results in question, since there is a possibility that more data could change the p-values.

For Gallery 69a, we found that the p-value changed dramatically from one exhibit to the next. This implied that different exhibits in the gallery attract different types of people. For example, the Michelangelo exhibit had a p-value of 0.056 while the "Inhuman Traffic" exhibit had a p-value .897 when compared with the British Museum's general demographic information for age.

Chapter 5: Recommendations and Conclusion

5.1 Biases

We discovered several biases while doing our gallery research involving the small sample size of our tracking studies and surveys and a non-response bias regarding language for our questionnaires. We considered these biases when generating recommendations and conclusions, and ask that readers also keep these biases in mind when reviewing our results.

5.2 Gallery 68

Our analysis of Gallery 68 tracking studies and surveys provided us with a series of conclusions and thoughtful recommendations for the DCM. From the tracking studies of Gallery 68 as a whole before the contents of Cases 3 and 10 changed, we were able to conclude that most visitors to the gallery were browsers, suggesting that the gallery mainly attracts visitors without knowledge or interest in the field of numismatics. Additionally, the depth of engagement of visitors from Gallery 68 was largely orientation and exploration, indicating that most visitors did not interact with exhibits for very long. We found that the cases nearest to the doors exhibited the most first visits in the gallery, while cases 18 and 19 and panel 4 (all near door 2) were the most successful exhibits in terms of both Attracting and Holding Power. We found that the exhibit "Lamb of God," on display in Case 10, was very successful in terms of Attracting Power, but exhibited a low Holding Power. The gallery observed 40 walkthroughs of the 140 visitors tracked.

After the contents of Cases 3 and 10 changed, we saw a large increase in the number of searchers, found that several more visitors were browsers, and that there were no researchers. The depth of engagement of visitors and the cases exhibiting the most first stops after the cases changed was practically identical to before the cases changed, while Attracting Power of the cases increased overall. The gallery exhibited two less walkthroughs (38 of the 138 tracked) than before the cases changed.

Our results for Case 10 in Gallery 68 suggest that the BAMS 2010 and "Lamb of God" exhibits were the most successful. The "Lamb of God" exhibit was the most successful exhibit in terms of Attracting Power, while the BAMS2010 exhibit was more

successful in Holding Power. However, in both studies, Case 10 still exhibited a low Holding Power in relation to the rest of the gallery, presumably because it is a small case. Therefore, we concluded that Case 10 must rely on its Attracting Power to lure visitors to the Case. When comparing the last 4 exhibits housed in Case 10, we found that the Attracting Power of Case 10 largely depends on the contents of the case. Cases must be able to attract visitors to hold them, and Case 10 exhibited a very high walkthrough rate in the last 6 evaluations. Therefore, to help increase Holding Power, we suggest that the DCM uses Case 10 to house artifacts that deviate from the theme of the rest of the gallery to catch the attention of visitors. We hypothesize that this strategy would also help lower the 33% walkthrough rate of Gallery 68 itself. Since Case 10 is in the centre of the gallery, it has a prime location to attract visitors. If Case 10 could encourage some of the walkthrough visitors to stop just once in the gallery, we believe that it would increase the possibility that visitors would take the time to look at other cases in the gallery.

The surveys and tracking studies performed on the new Case 3 suggested that the changes were negligible. Like the old case 3 evaluations, the larger, more detailed items inside the new case 3 gained the most attention and time from visitors. The gold bars in the middle of the display were the most popular point of interest in the case. When we tested visitors, we found that most visitors could not provide a definition for the term "Tetradrachm." Visitors had very split preferences concerning the panels. We found that the top panel appealed to those who had time and wanted to read a lot of information. The bottom panel attracted visitors, mainly younger people, who just wanted the hard facts about an item instead of reading large amounts of text.

5.3 Gallery 69a

Our results from the tracking studies and surveys for Gallery 69a suggest that the gallery setup is successful. Viewing strategy in Gallery 69a was largely browser, however more searchers and researchers visit Gallery 69a than Gallery 68. Gallery 69a had a high Attracting Power as a whole and a relatively low walkthrough rate, suggesting that visitors generally browse through the entire gallery after entering. Our results determined the two cases closest to the door (1 and 10) had the highest first visit percentages, a similar pattern to Gallery 68. We found that the Holding Power of the cases was much

lower than their Attracting Power, but Panels 4 and 8 had the highest Attracting Power of all the exhibits in the gallery.

5.4 Visitor Survey Format

We investigated visitor motivation for entering the British Museum and Galleries 68 and 69a through visitor surveys. Each answer choice to Question #9 (on both gallery surveys) and #18 (on the Gallery 69a survey) was associated with a specific visitor motivation style to classify visitors into motivation categories easily. Question #9 on both surveys investigated visitor motivation for attending the British Museum, providing visitors with a list of reasons to choose from. This question was followed by Question #10, which asked for the visitor's main motivation for entering the British Museum of their reasons chosen in Question #9. Question #18 on the survey for Gallery 69a followed the same format as Question #9. We provided visitors with a list of what they got out of their experience in the gallery and allowed them to choose several answers. However, no follow-up question asked for the visitor's main reason for attending the gallery. Since we allowed visitors to choose several answers for Question #18, we encountered many problems when trying to classify visitors into just one motivation category. We believe that it would alleviate this confusion if the DCM added a follow-up question to Question 18 that asks visitors what they predominantly got out of the experience.

5.5 Visitor Demographics

We compared demographical data between the British Museum and the DCM using data given to us by the Museum and old and recent gallery surveys done by the DCM. Our results demonstrate that the DCM must continue collecting demographic information for Gallery 69a because the visitor demographics vary depending on the exhibit showing in the gallery. We hypothesize that demographic data may not need to be collected in the future for Gallery 68. However, we were unable to collect enough data for Gallery 68 to make any definite conclusions. We recommend the DCM to continue collecting demographic data for Gallery 68 in order to make any concrete conclusions.

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Appendix A: Work Timeline

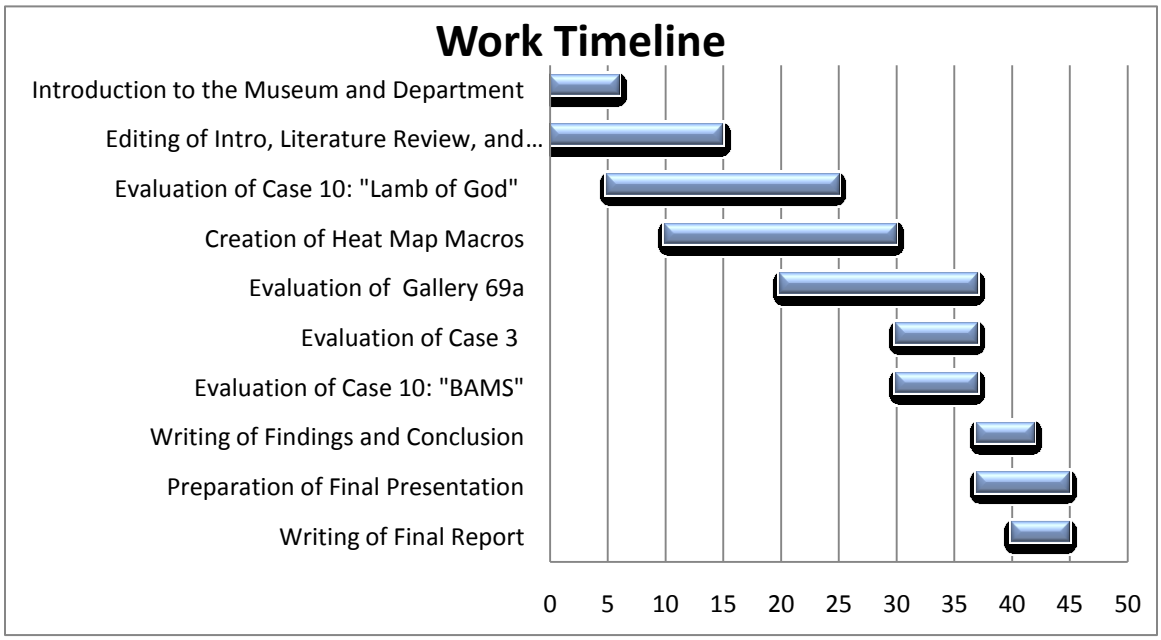


Figure 33: Timeline of project work in London. (White 2009)

Appendix B: Guidelines for Evaluating an Exhibition

This is an internal, unpublished document

Guidelines for evaluating an exhibition

- Allocate a time period, say 2 or 3 weeks to carry out the evaluation
- Draw up a report with aims and methods including observations, questionnaires and headcounts. Add the conclusions and recommendations to this at a later date. Blank on s:/
- Questionnaire blank provided on the S:/. Try to get a good mix of people, not just those who stayed in the gallery a long time
- Plan of 69a blank provided on the S:/ Annotate any changes relevant to the latest exhibition. Photocopy for use in observations. Try to get a good mix of times, including mornings, lunchtimes, afternoons, school holidays and weekends (if possible.) Note the direction the visitor takes around the exhibition, is this what the curator intended?, do people follow the theme, chronology etc. Note time spent looking at each case.
- Headcounts are done as often as possible, for at least ½ hour, at different times of the day, again school holidays and weekends if possible.
- File all results under S:/ Procedures/exhibitions/evaluations
- Add relevant data to the 'Evaluation comparison' table on Excel - S:/ Procedures/exhibitions/evaluations.
- Finish report and share information with relevant curators.

ALSO

What are our measures of success?

- Length of visit
- Visitor numbers
- Engagement with cases – time spent looking at each case?
- Test for key messages – these should be clearly stated on the 'content review' form

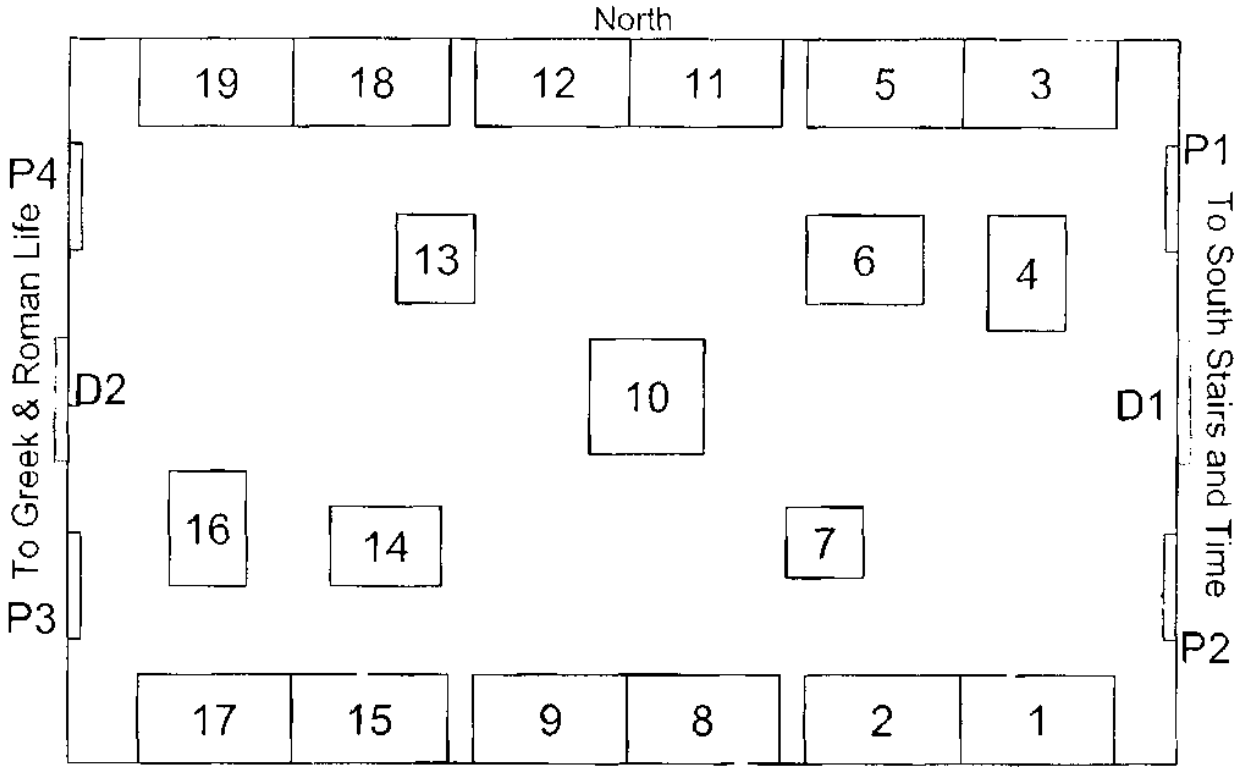
How to describe to a friend

What key words/phrases would you use to describe the exhib.

Examine link between labels and objects - time spent looking at each case – decide how long a person would have to look at a case, to look at more than just labels.

Find out if people understand numismatic terminology

Appendix C: Map for Tracking Studies of Gallery 68



South

Walkthroughs

#	D	T	G C	D T

☐

☐ Refusal to answer

Reason:

☐ Lang ☐ Time

Other:

#	Date	Time	Group comp	Dwell time

Overall viewing strategy:

Viewing strategy
B=Browser
F=Follower
S=Searcher
R=Researcher

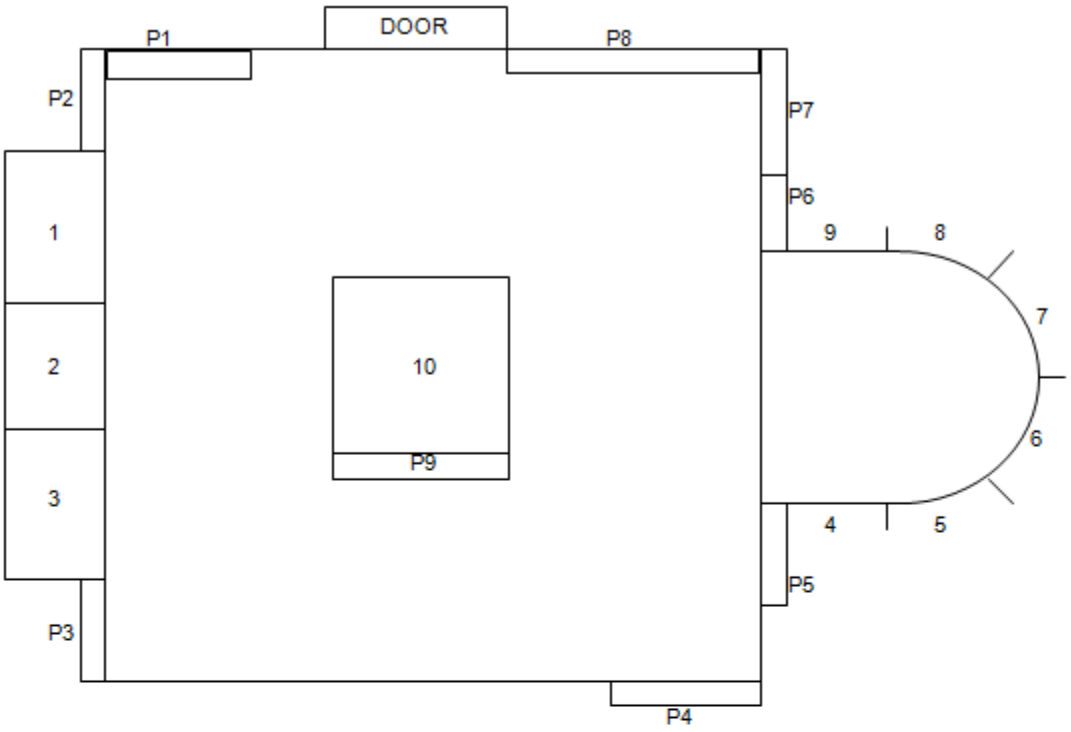
Depth of Engagement
O = Orientation
E = Exploration
D = Discovery
I = Immersion

D=Date
T=Time
GC=Group comp
DT=Dwell time

Level of engagement
L1=Glance
L2=10 secs
L3=10-40 secs
L4=40 secs+

D=Discussion
P=Photograph
A=Audio tour engaged

Appendix D: Map for Tracking Studies of Gallery 69a



Walkthroughs

#	D	T	G C	D T

#

☐ Refusal to answer

Reason:

☐ Lang ☐ Time

Other: _____

#	Date	Time	Group comp	Dwell time

Overall viewing strategy:

Viewing strategy
B=Browser
F=Follower
S=Searcher
R=Researcher

G=Glance
X=Stop
D=Discussion
P=Photograph
A=Audio tour engaged

D=Date
T=Time
GC=Group comp
DT=Dwell time

Level of engagement
L1=Glance
L2=10 secs
L3=10-40 secs
L4=40 secs+

Appendix E: Survey Questionnaire for Gallery 69a

Gallery 69a: Impressions of Africa; Money, Medals, and Stamps:

Hi, my name is ……. and I'm working on behalf of the British Museum. We are looking to find out more about our visitors and what you think about the museum. May I have a few minutes of your time for a brief interview?

Thank you. Please do not feel pressured to answer in any particular way. We will not be offended by any negative responses.

1. How long have you been in the museum today? Hours……Minutes……

2. How long do you intend to stay in the museum today? …….

3. Is this your first visit to The British Museum? □Yes □No **(if yes, go to Q6)**

4. If not their first time: **How long ago was your last visit?**

1. □ 12 months ago or less (**Continue**)

2. □Between one and two years ago (**Skip to Q6**)

3. □Between two and five years ago (**Skip to Q6**)

4. □More than five years ago (**Skip to Q6**)

5. Including today, how many times have you visited in the past 12 months?.....

6. What was your reason for coming to the museum today? ***(Show Card A)***

1. □ To see a specific gallery or exhibit (If so which)……..

2. □A general visit to the museum

3. □Attend a talk, tour, or special event

4. □To visit the shop

5. □To visit the café

6. □To meet friends

7. □Other……

7. How would you best describe your level of knowledge of the subjects covered in Gallery 69a, Impressions of Africa?

1. □Expert knowledge

2. □General knowledge **(Skip to Q9)**

3. □Little or no knowledge **(Skip to Q9)**

8. If expert knowledge, in which area would you consider yourself an expert?

……

9. I'm going to list some reasons for attending The British Museum, have a look down the list and say which apply to you. Tick all that apply. . .(Show card B)

1. □I am drawn to interesting buildings

2. □It is one of the major attractions in London

3. □It is an enjoyable way to pass the time

4. □It is a nice place to spend time with friends and Family

5. □To encourage children's interest in history

6. □To improve my own knowledge

7. □I have a personal interest in the subject

8. □I have an academic/professional interest in the subject

9. □To get a better understanding of other people/cultures

10. □To be reminded of what life was like when I was younger

11. □To experience what the past was like

12. □For a strong sense of personal connection or identity

13. □To have an emotionally moving experience

14. □To see fascinating, awe-inspiring things

15. □To see beautiful things in an attractive setting

16. □To stimulate my own creativity

17. □For peaceful, quiet contemplation

10. Which of those would you say is your main reason for visiting today?

.....

I'm going to ask you a few questions about the Gallery 69a you just visited. To speed things, up I'm going to record your answers on a Dictaphone and then write them down later.

11. Did you intend to visit this gallery? □ Or did you just wander in? □

12. Of all the objects you saw, did any stand out/catch your eye? What was it? Is there any reason you favoured this object? (Dictaphone)

13. Did you see one or more general themes in the gallery? What did you think was the most interesting theme in the gallery? (Dictaphone)

14. Did you stop/notice the central case from outside? (Dictaphone)

15. What impression of Africa did you get from the gallery? Maybe 5 words or associations that come to mind? (Dictaphone)

16. Did you use any of the maps or panels when looking at the gallery? Any in particular? Did you find them helpful?(Dictaphone)

17. What time period do you think the exhibit spanned?

18. After spending time in the gallery, what would you say you got out of the experience? (Show Card C) (Prompt: related to motivations for coming to the Museum)

1. □ Found an enjoyable way to pass the time
2. □ Spent an enjoyable time with friends and family
3. □ Encouraged my children's interest in history
4. □ Improved my knowledge of Iranian coins
5. □ Now have a personal interest in the subject
6. □ Gained a better understanding of other people/cultures
7. □ Experienced what the past was like
8. □ Felt a strong sense of personal connection or identity
9. □ Had an emotionally moving experience
10. □ Saw fascinating, awe-inspiring things
11. □ Saw beautiful things in an attractive setting
12. □ Stimulated my own creativity
13. □ Found a place for peaceful, quiet contemplation
14. □ Think that this gallery is one of the main attractions in the Museum

19. Do you have any other comments about the gallery or displays here? Any suggested improvements?*(Dictaphone)*

I would now like to ask some questions about you. These are strictly for classification purposes and your name will not be recorded.

20. What is your first language? …….

21. In which country do you currently live? .....

22. Who are you here with? *(show card D)*

1. □Alone
2. □Children
3. □Adults
4. □School Party

23. What age group do you fall into? *(show card E)*

1. 0-7 years **2.** 8-11 years **3.** 12-14 years **4.** 15-16 years
5. 17-19 years **6.** 20-24 years 7. 25-34 years 8. 35-44 years
9. 45-54 years 10. 55-65 years **11.** 65+ years **12.** Prefer not to say

24. □Male □Female

Appendix F: Map for Case 3; Gallery 68 Tracking Study

<table>
<tr><td colspan="12">Case header</td></tr>
<tr><td colspan="2">Header 3.1</td><td colspan="4">Header 3.2</td><td colspan="4">Header 3.3</td><td colspan="4">Header 3.4</td></tr>
<tr>
<td rowspan="2">Label strip</td><td>Statue</td>
<td rowspan="2">Label strip</td><td rowspan="2">Cuneiform tablet</td><td rowspan="2">Label strip</td><td rowspan="2">Amphora Handle</td>
<td rowspan="2">Label strip</td><td rowspan="2"></td><td rowspan="2">Label strip</td><td rowspan="2">Gold bars</td>
<td rowspan="2">Label strip</td><td rowspan="2"></td><td rowspan="2">Label strip</td><td rowspan="2"></td><td rowspan="2">Label strip</td><td rowspan="2"></td>
</tr>
<tr><td>Block</td></tr>
<tr><td colspan="2">Footer 3.1</td><td colspan="4">Footer 3.2</td><td colspan="4">Footer 3.3</td><td colspan="4">Footer 3.4</td></tr>
</table>

#	Date	Time	Group comp	Dwell time

Viewing strategy		**Level of Eng.**	**Refusal to answer**
B=Browser	D=Discussion	L1=Glance	
F=Follower	P=Photograph	L2=10 secs	Language
S=Searcher	A=Audio tour	L3=10-40	Time
R=Researcher	engaged	secs	Other
		L4=40 secs+	_____

Appendix G: Survey Questionnaire for Case 3; Gallery 68

Gallery 68: Case 3 **Number:**

Hi, my name is …… and I'm working on behalf of the British Museum. We are looking to find out more about our visitors and what you think about the museum. May I have a few minutes of your time for a brief interview?

Thank you. Please do not feel pressured to answer in any particular way. We will not be offended by any negative responses.

I'm going to ask you a few questions about the case that you just looked at. To speed things up I'm going to record your answers on a Dictaphone and then write them down later, would this be ok with you?

1. **Did you intend to visit the Money Gallery? □ Or did you just wander in? □**
2. **Was there a particular object in this case that attracted your attention? Why? Which object did you look at next, and why (case narrative)?** (Dictaphone)
3. **What would you say the main themes of this case are? Can you list few words or associations that come to mind?** (Dictaphone)
4. **Could you tell me about anything that comes to mind when you hear the word "Tetradrachm" as in "This tetradrachm of Alexander the Great…"?** (keep prompting)
5. **Is there anything you wanted to know from the display but couldn't find out?** *(Dictaphone)*
6. **Do you have any suggestions or comments about the case that you would like us to take into account?**
7. **Is this your first visit to The British Museum?** □ Yes **(go to 4)** □ No **(go to Q2)**
8. If not their first time: **How long ago was your last visit?**
    1. □ 12 months ago or less (**Continue**)
    2. □ Between one and two years ago (**Skip to Q4**)
    3. □ Between two and five years ago (**Skip to Q4**)
    4. □ More than five years ago (**Skip to Q4**)
9. **Including today, how many times have you visited in the past 12 months?.....**
10. **What was your reason for coming to the museum today?** ***(Show Card A)***
    1. □ To see a specific gallery or exhibit (If so which)……..
    2. □A general visit to the museum
    3. □Attend a talk, tour, or special event
    4. □To visit the shop
    5. □To visit the café
    6. □To meet friends
    7. □Other……
11. **How would you best describe your level of knowledge of the subjects covered in this case, money in the ancient world?**

1. □Expert knowledge
2. □General knowledge
3. □Little or no knowledge

12. **I'm going to list some reasons for attending The British Museum, have a look down the list below and say which apply to you.** Tick all that apply. (Show card B)
    1. □I am drawn to interesting buildings
    2. □ It is one of the major attractions in London
    3. □It is an enjoyable way to pass the time
    4. □It is a nice place to spend time with friends and Family
    5. □To encourage children's interest in history
    6. □To improve my own knowledge
    7. □I have a personal interest in the subject
    8. □I have an academic/professional interest in the subject
    9. □To get a better understanding of other people/cultures
    10. □To be reminded of what life was like when I was younger
    11. □To experience what the past was like
    12. □For a strong sense of personal connection or identity
    13. □To have an emotionally moving experience
    14. □To see fascinating, awe-inspiring things
    15. □To see beautiful things in an attractive setting
    16. □To stimulate my own creativity
    17. □For peaceful, quiet contemplation
    18. □Other, please state……
13. **Which of those would you say is your main reason for visiting today?**

    .....

I would now like to ask some questions about you. These are strictly for classification purposes and your name will not be recorded.

14. **What is your first language? …….**
15. **In which country do you currently live? .....**
16. **Who are you here with?** *(show card D)*
    1. □Alone
    2. □Children
    3. □Adults
    4. □School Party
    5. □Organised group
    6. Other, Please state…….
17. **What age group do you fall into?** *(show card E)*

1. 0-7 years **2.** 8-11 years **3.** 12-14 years **4.** 15-16 years
5. 17-19 years **6.** 20-24 years **7.** 25-34 years **8.** 35-44 years
9.45-54 years **10.** 55-59 years **11.** 60-64 years **12**. 65+ years
12. Prefer not to say

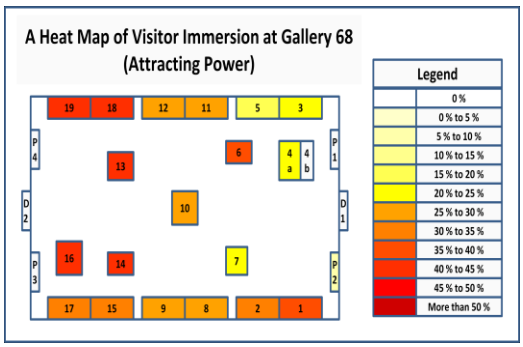
16. □ Male □Female

Thank you for your time today. We appreciate your assistance.

Appendix H: Macro User Guide

User Manual for the Heat Map Macro of Gallery 68 and 69a

1. Macros Overview



The macros found in the files Gallery68HeatMapv2.bas and Gallery69aHeatMapv2.bas are used by Excel spreadsheets of Gallery 68 and 69a tracking study data to create heat maps of the galleries. The heat maps represent the Attracting and Holding Power of each case.

The macro finds the Attracting Power of the cases by calculating the percent of people who interacted with the case in some way. These interactions range from a single glance to stays of more than forty seconds long. The macro calculates the Holding Power of a case by dividing the number of people who stayed at the case for more than ten seconds by the number of people who visited the case. Calculating Holding Power in this fashion allows the Attracting Power of the case to be eliminated as a factor since only the people who looked at the case are counted. For example, if 5 people visit the case, and 2 stay for longer than 10 seconds, then the Holding Power would be calculated as (2/5) *100 = 40% for the case.

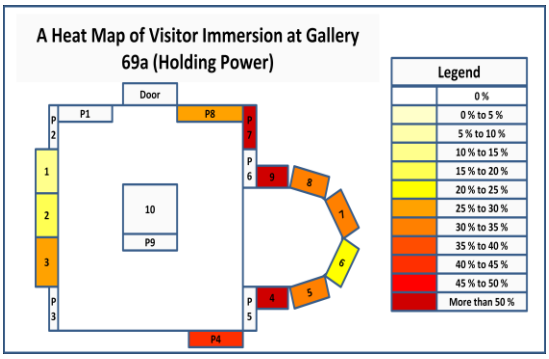


Figure 1: Heat Map of Holding Power in Gallery 69a

2. Formatting Requirements

There are some important requirements on the formatting of the tracking studies data in the Excel spreadsheet that need to be met before running the macro. The most important of those is that the macros expect the cases to be numbered in a specific order. To compensate for the eventuality that number and position of cases will change as the exhibits change, the maps that the macros use

contain a number of cases, which may not be used in most exhibits. It is important to remember to have those cases on the Excel spreadsheet of the tracking study even if there are no cases. The cases will then show up as completely white on the heat map as no one will have looked at it.

The user should also format the spread sheet in the same manner as the figure below, with visitor numbers in the first column starting on the third row and case numbers in the first row starting in the second column.

case number	1	2	3	4A	4B	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	P1	P2	P3	P4
sample number																								
1	L3		L1			L2	L1		L1	L1		L1	L2											
2														L1										
3	L1						L2		L2	L1				L1	L3P	L1								
4											L1		L2					L3D						
5							L1		L1	L1			L3	L1			L1	L3						
6				L1			L3			L1				L1	L3			L3	L3					L3
7	L1						L1		L1	L3														
8	L1		L1						L1		L2	L1			L2	L1	L2	L3	L2					
9	L1							L1						L1	L1		L2	L1	L1					
10	L1							L1	L3D	L4D				L1	L1	L1								
11	L4	L4		L1			L2				L3													
12				L4																				
13				L4					L2	L3/L2		L2		L2	L2	L2	L2	L3	L4D/L3					
14								L1		L1					L1		L1							
15				L2					L1	L1			L1											
16				L2			L1				L1	L1				L1	L2	L2						
17				L1				L1			L1	L1					L1	L3	L4					
18	L2		L1							L1			L1			L1D								
19				L1			L1							L1			L2	L2	L1					
20	L1		L4						L3	L1	L1		L2/L3	L3				L3D	L1					
21	L4	43						L1																
22						L2					L2		L2						L2					
23	L2	L3				L2D						L2	L2D					L2D	L2D					
24		L4D				L4D/L3D	L3/L3D				L3D	L3D						L3						
25	L1						L3									L1		L2						
26	L3	L2				L2					L2						L1							
27		L2P	L2P			L2P	L2P					L2P	L2P	L2P			L2P		L2P					
28										L1D				L3D					L3D	L3D				
29								L1		L1					L3,D		L3,D,P	L3,D						
30	L2	L3							L1						L1				L2P					L1

Figure 2: Correct Formatting of Tracking Study Data for Heat Map macro

It is also important that the number of lines entered reflect the number of people that were tracked. Adding visitors without entering their tracking data or creating a line summing up the data will create an error in the percentages in the heat map.

2.1 Gallery 68 Specifics

As can be seen on the floor plan to the right, Gallery 68 has nineteen cases and four panels. However, case 4 became two distinct cases to accommodate for the Pieces of Eight exhibit in 2010. As such, there should be twenty different columns for cases followed by another four for the panels in the tracking study spreadsheet. When creating the Excel spreadsheet with the tracking study information, make sure the data matches with the floor plan shown above.

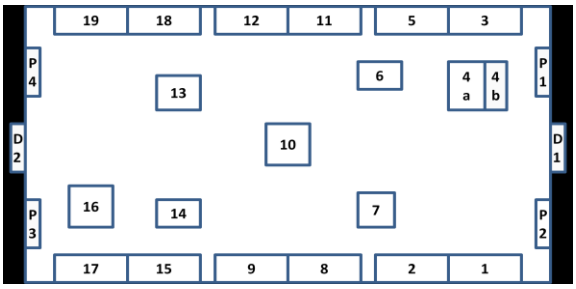
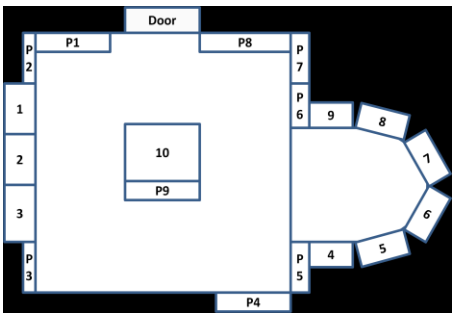


Figure 3: Floor Plan of Gallery 68

2.2 Gallery 69a Specifics



Gallery 69 houses temporary exhibits. As such, the floor plan constantly changes to match the material being displayed. To solve this problem, the Gallery 69a macro uses the floor plan shown in Figure 4. This floor plan has more panels than the current exhibit may have to prepare for the possibility that a future exhibit could have panels in the currently empty spots. When creating the Excel spreadsheet with the tracking study information, it is important to make sure the data matches with the floor plan shown above.

Figure 4: Floor Plan of Gallery 69a

3. Importing the Macros

Before being able to use the macros, the user must import them into Microsoft Excel. The following procedure will accomplish this.

1. The first step is to open the Microsoft Visual Basic Editor from Excel. There are two ways to accomplish this. The hotkey "Alt+F11" opens the editor or you can open the editor by clicking on the Visual Basic icon in the Developer tab in Excel.
    - It is possible that the Developer tab is not available when starting Excel. To change that, click on the Microsoft Office Button() in the top left of the screen and click on Excel Options. In the "Popular" tab, click on "Show Developer tab in the Ribbon" checkbox.
2. To finish importing the macro, go in the Visual Basic Editor, click on the file tab, and select "Import Files...". Alternatively, the hotkey "Ctrl +M" will open up the file importing window.
3. Then, navigate to "Gallery68HeatMapv2.bas" or "Gallery69aHeatMapv2.bas", depending on which gallery is being evaluated. Finally, click on "Open" after you have selected the appropriate file.

4. Running the Macros

After importing the macro, the user can run it by opening the Microsoft Visual Basic Editor, clicking on the green arrow (), selecting the appropriate macro and clicking on "Run". Alternatively, the user can access the macro from Excel by selecting the View tab, pressing the Macro icon (

), selecting the appropriate macro in the opened menu, and clicking on "Run". The Heat maps are now created in the Excel file.

Appendix I: Summative Team Assessment

Frederik Clinckemaillie:

-Key Contributions:

I performed one third of all Tracking Studies and Surveys
I created the Heat Map macros and attached user guide
I recorded the audio of 1/3 of interviews
Follow up: The main issue mentioned about me in the formative assessment was my nervousness with speaking with strangers. I think I was able to deal with this properly as I now find the process a lot easier.

Dana performed one third of all Tracking Studies and Surveys
Dana created and maintained the spreadsheets of the Gallery 69a Questionaire Information.

Andrew performed one third of all Tracking Studies and Surveys
Andrew created and maintained the Gallery 68 and 69a Tracking Studies spreadsheets.
Andrew maintained Case 3 spreadsheets and created dot map of the case

Follow ups for Dana and Andrew: In the formative evaluation, the main thing they had to improve was staying on task. In the last weeks, I think they have greatly improved in that realm as the end of the projects came closer and closer.

Dana Peterson

-Key contributions:

I did one third of all Tracking Studies and Surveys
I l entered most audio recordings of Gallery 69a into the questionnaire spreadsheet and entered all other information in there
Follow up: I think I improved in the area of staying on task.

Frederik did one third of all Tracking Studies and Surveys
Frederik did the heat map macros
Frederik did the heat map user guide
Follow up: At the end of this experience, Frederik was neutral about surveying people. Although he didn't like it, he did it anyway.

Andrew did one third of the tracking studies
Andrew kept the excel sheet for tracking in both galleries
Andrew did graphs.
Follow up: Andrew was motivated to be more on task.

Andrew Lybarger

-Key contributions:

I did 1/3 of all Tracking Studies and Surveys
I created the word clouds
I created the tracking study spreadsheets
Follow up: I did my best to stay on task.

Frederik did 1/3 of tracking studies and surveys
Frederik created the macros
Follow up: When the paper started coming together, Fred did a good job of putting the whole thing together.

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Dana did 1/3 of tracking studies
Dana did a very good job editing the paper in the end
Follow up : Dana did a good job staying on task at the end while editing t he paper

Team Assessment

We all think that we really came through as a team as the end date started getting closer. We handled the problem of staying on task by constantly pushing each other to keep on doing work whenever someone had nothing to do. Andrew in particular started each day by asking what the plan was for that day so that we all knew what had to be done.