


Spring 5-2015

Power to the People: A Comprehensive Look at Crowdsourcing Initiatives in Cultural Institutions

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Power to the People:
A Comprehensive Look at Crowdsourcing Initiatives in Cultural Institutions

By
Danielle Pace

Submitted in partial fulfillment of the requirements for the degree
Master of Arts in Museum Professions
College of Arts and Sciences
Seton Hall University
May 2015

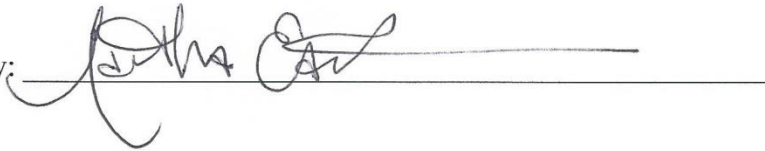
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A Comprehensive Look at Crowdsourcing Initiatives in Cultural Institutions

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Danielle Pace

Approved by:

A handwritten signature in black ink, appearing to read 'Martha Easton', is written over a horizontal line. The signature is cursive and extends slightly to the left and right of the line.

Martha Easton
Thesis Advisor

Submitted in partial fulfillment of the requirements for the degree
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Abstract

Today, crowdsourcing has become an integrative approach to completing projects using the help of the general populous. These projects aid museum staff by processing large quantities of data, which otherwise could not be completed due to time and/or staff restraints. Through crowdsourcing, cultural institutions have the ability to outsource these tasks to volunteers, who can complete them at much faster rates. Although staff members are needed to validate and supervise these projects, crowdsourcing remains a useful tool in increasing public interactions and project efficiency.

This thesis presents a thorough outline of what crowdsourcing is, how it is being utilized, and how volunteers can be motivated to participate. Case studies are presented, providing a comprehensive look into each of the six types of crowdsourcing. These studies include the Brooklyn Museum, September 11th Memorial and Museum, South Eastern Regional Network of Expertise and Collections, British Library, Peoria Historical Society, and Smithsonian Institution. Utilizing these critical examples, this paper presents several motivational theories of volunteer participation and outlines how this knowledge can be implemented to create a more successfully crowdsourced project.

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Introduction

In 2012, the American Alliance of Museums (then the American Association of Museums) released its yearly “Trendswatch” report. The number one trend that year? Crowdsourcing. The process of inviting the general public into the once hidden spaces of the museum, to perform jobs normally completed by museum staff was an interesting and innovative idea. The report touted the positives of incorporating crowdsourced projects, stating that “Citizen history, citizen science and crowdsourced art may help fuel the renaissance of the amateur expert, fostering new opportunities for lifelong learning.”¹ This opportunity brought with it a chance to create a task that would satiate the appetites of the increasing number of patrons who were looking for more interactive experiences. Looking toward the effect these projects would have on museums, the Alliance concluded that “[w]ell-designed, carefully managed crowdsourcing projects can be a priceless tool for museums faced with organizing and realizing the value of huge amounts of digital data.”²

Just three years later, crowdsourcing continues to make strides in the museum professional world. In 2014, with funding from the Institute of Museum and Library Sciences and the National Endowment for the Humanities, the crowdsourcing coalition “Crowd Consortium” was created to “bring together libraries, archives, and museums in order to effectively use crowdsourcing techniques to increase what we know about artifacts held in national collections and to enhance the public experience of libraries, archives, and museums.”³ Since its inception, this consortium has created introductory webinars and conferences aimed to educate professionals and advertise the benefits crowdsourcing can have on

¹ “TrendsWatch:2012,” American Association of Museums, 2012, accessed May 4, 2015, http://www.aam-us.org/docs/center-for-the-future-of-museums/2012_trends_watch_final.pdf?sfvrsn=0.

² American Association of Museums, “TrendsWatch: 2012.”

³ Crowd Consortium, accessed May 4, 2015, <http://www.crowdconsortium.org/>.

cultural institutions.

When the consortium first began, they invited museum and library professionals to participate in a survey about their knowledge of, and interest in, crowdsourced projects. Over three hundred people participated in the survey. Of these participants, 80% were interested in learning what projects existed, and 70% were interested in learning how to produce their own crowdsourcing project,⁴ proving that crowdsourcing has become an influential and ever-growing trend as cultural institutions began to utilize continuing technological advances.

The following pages will seek to fill this knowledge gap by presenting a thorough outline of what crowdsourcing is, how it is being utilized, and how volunteers can be motivated to participate. By presenting in depth case studies of successful projects covering each of the six crowdsourcing types, this paper demonstrates how crowdsourcing is being used in cultural intuitions today, and also breaks down how each is implemented and run. This provides a comprehensive look at the opportunities available to any institution, no matter their size, budget, or subject matter.

⁴ “Fall 2014 Environmental Scan,” Crowd Consortium, Fall 2014, accessed May 4, 2015, <http://www.crowdconsortium.org/survey-1-environmental-scan/>.

Chapter 1:

Crowdsourcing Basics

The objective of this chapter is to introduce the definitions, theories, and models behind the implementation of crowdsourced projects. Crowdsourcing as a platform remains a new and expansive idea and so, much of the information and studies done encompass a wide variety of results and specifications. As we will see, crowdsourcing is not just a concept used by cultural institutions; many of the results found throughout this section were influenced by the nuances of each writer's specific profession. However, these definitions, models, and theories share similar attributes and contribute to the overall ideas and theories of crowdsourcing. This chapter will bring together the varying opinions and results from across the board and present them in a cohesive fashion in order to answer three key questions:

- What is crowdsourcing?
- How can crowdsourcing be accomplished?
- Why does crowd participation differ from individual participation?

Definition

In 2006 Jeff Howe, a contributing editor for *Wired Magazine*, wrote an article documenting a developing phenomenon wherein professionals were asking for help from the general public in order to complete work related tasks.⁵ Coining the phrase 'crowdsourcing,' Howe formally defined this term to mean:

The act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production

⁵ Jeff Howe, "The Rise of Crowdsourcing," *Wired.com*, June 2006, accessed October 4, 2014, http://archive.wired.com/wired/archive/14.06/crowds.html?pg=4&topic=crowds&topic_set.

(when the job is performed collaboratively), but is also often undertaken by sole individuals.⁶

However, crowdsourcing remains a relatively new and evolving phenomenon. Since Howe's article introduced the idea, various definitions of the word have been adopted, with no one explanation becoming the standard. In 2012, the *Journal of Information Science* published an article that sought to aggregate these interpretations into one comprehensive and accepted definition.⁷ Searching through 209 documents, the study found a total of 40 separate and unique definitions of the word. The study concluded that no simple and overarching definition could be reached due to the specific nature of each crowdsourced project, but that all crowdsourcing projects included the following eight guidelines:

- There is a clearly defined crowd
- There exists a task with a clear goal
- The recompense received by the crowd is clear
- The crowdsourcer is clearly identified
- The compensation to be received by the crowdsourcer is clearly defined
- It is an online assigned process of participative type
- It uses an open call of variable extent
- It uses the Internet

Using these guidelines the researchers summarized that crowdsourcing is:

...a type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The understanding of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge, and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their

⁶ Howe, "The Rise of Crowdsourcing."

⁷ Enrique Estelles-Arolas and Fernando Gonzalez-Ladron-de-Guevara, "Towards an Integrated Crowdsourcing Definition," *Journal of Information Science*, vol. 38 no.2 (April, 2012): 189-200, accessed October 6, 2014, <http://jis.sagepub.com/content/38/2/189.short>.

advantage that what the user has brought to the venture, whose form will depend on the type of activity undertaken.⁸

Although the authors were unable to create a comprehensive definition, and instead created a broad generalization as to what a crowdsourced project could be, they did note that the top three cited definitions for ‘crowdsourcing’ were taken from Jeff Howe (above); Daren C. Brabham, and Wikipedia. It is important to note that Brabham actually defines the word in two ways. The first defines the term as an “online, distributed, problem-solving and production model.”⁹ The second definition states that crowdsourcing is “a strategic model to attract an interested, motivated crowd of individuals capable of providing solutions superior in quality and quantity to those that even traditional forms of business can.”¹⁰ The final definition, provided by Wikipedia, states that crowdsourcing is “the process of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, and especially from an online community, rather than from traditional employees and suppliers.”¹¹

Since this paper will focus on crowdsourcing initiatives in a cultural rather than business setting, we will be dismissing Brabham’s definitions and focusing more on the definitions provided by Howe, Wikipedia, and the criteria set forth by the Estelles-Arolas and Gonzalez-Ladron-de-Guevara study.

⁸ Estelles-Arolas and Gonzalez-Ladron-de-Guevara, “Towards an Integrated Definition of Crowdsourcing,” 196.

⁹ Daren C. Brabham, “Moving the Crowd at iStockphoto: The Composition of the Crowd and Motivations for Participation in a Crowdsourcing Application,” *First Monday*, vol.13 no.6 (June 2, 2008), accessed October 6, 2014, <http://firstmonday.org/article/view/2159/1969>.

¹⁰ Daren C. Brabham, “Crowdsourcing as a Model from Problem Solving: An Introduction and Cases,” *Convergence: The International Journal of Research into New Media Technologies*, vol.14 no.1 (February, 2008), accessed October 6, 2014, <http://sistemas-humano-computacionais.wdfiles.com/local--files/capitulo%3Aredes-sociais/Crowdsourcing-Problem-solving.pdf>.

¹¹ “Crowdsourcing”, Wikipedia, last modified September 29, 2014, accessed October 6, 2014, <http://en.wikipedia.org/wiki/Crowdsourcing>.

Collective Intelligence and the “Wisdom of Crowds” Theory

Without a crowd to participate, crowdsourcing would be futile. So what is this crowd, and why is it being utilized in the first place? As defined by Trevor Owens in “Digital Cultural Heritage and the Crowd”, the crowd simply refers to engaged members of the general public who volunteer to aid in a specified project.¹² He notes that is important to distinguish that participants are not necessarily scholars in the cultural domain, but are rather enthusiastic or curious patrons who are otherwise unconnected with the institution.

So why are crowdsourced projects different from independent projects? Research has found that when these participants are brought together to solve a problem, their solution often yields a result similar to the more ideal answer.¹³ In his book, *The Wisdom of Crowds*, James Surowiecki gives the example of a group of students asked to guess how many jellybeans there are in a jar. When the total guess of each student was added up and averaged, the groups estimated that the jar contained 871 jelly beans. The actual count? 850. When the results were further studied, it was discovered that out of fifty-six students, only one guessed closer to the actual number of jellybeans. This phenomenon became known as the “Wisdom of Crowds” theory.

Surowiecki makes a few arguments as to why this happens. First, he states that there is “no evidence...that certain people consistently outperform the group,”¹⁴ meaning that every time the test is run, a different person may be the closest to the actual number of jelly beans. However, the groups answer is consistently found to be more or just as accurate. He credits this insight to evolution, stating that “we have been equipped to make sense of the world around

¹² Trevor Owens, “Digital Cultural Heritage and the Crowd”, *Curator: The Museum Journal*, vol. 56 no. 1 (2013), accessed October 30, 2014, <http://www.crowdconsortium.org/wp-content/uploads/Digital-Cultural-Heritage-and-the-Crowd.pdf>.

¹³ James Surowiecki, *The Wisdom of Crowds* (New York: Anchor Books, 2005), 5.

¹⁴ Ibid.

us...collectively, we can make sense of the world around us...the crowd is holding a nearly complete picture of the world in its collective brain.”¹⁵

Another reason for the success of crowd intelligence is the diversity of its make-up. By integrating participants with varying levels of education and experience, the crowd becomes a cohesive source of information in all areas. This notion refers to collective intelligence, which is a “form of universally distributed intelligence, constantly enhanced, coordinated in real time, and resulting in the effective mobilization of skills.”¹⁶ In fact, Surowiecki makes the observation that the ability of a group of scholars, who are experts on the same subject, to problem solve will be limited to the knowledge they possess, which in this instance, is very much the same. However, once you begin to incorporate participants who have different knowledge and skill sets, the possibilities of solving a particular problem suddenly expand.¹⁷

Although Surowiecki’s book focuses on the intelligence gained when multiple people are tasked with creating a solution to a problem, he also discusses the need for independence of the individual participants in order for this process to truly be deemed “collective”. Like diversity, “independent individuals are more likely to have new information, rather than the same old data everyone is already familiar with.”¹⁸ He ascertains that crowds who become too intertwined are not truly acting on collective intelligence, but rather, can fall victim to repeating the mistakes made by others in their group. He theorizes that crowds cannot truly be wise unless they are “made up of people with diverse perspectives who are able to stay independent of each other.”¹⁹

¹⁵ Surowiecki, *The Wisdom of Crowds*, 11.

¹⁶ Pierre Levy, *Collective Intelligence: Mankind’s Emerging World in Cyberspace* (Perseus Publishing, 1999), 13.

¹⁷ Surowiecki, *The Wisdom of Crowds*, 30.

¹⁸ Surowiecki, *The Wisdom of Crowds*, 41.

¹⁹ Surowiecki, *The Wisdom of Crowds*, 41.

Crowdsourcing allows cultural institutions to tap into this collective brain and use the talents and skills possessed by members of the public who would not normally participate in the decision making process.

User Participation Models

Crowdsourced projects can be set up in a variety of ways depending upon the intended results of the project. This means that users will participate with each other, the organizing institution, and the project's information in specific ways to yield different sets of data. In order to accomplish this, different models must be employed. Understanding the theories behind them, and the ways users interact with each other, is imperative to the success of any crowdsourced project.

Understanding the systematic dynamics of user participation is another important element of creating a successful project. In their 2011 paper, Geiger et al. liken crowdsourcing to an open system, where elements from an “internal system” can be impacted by external circumstances.²⁰ In crowdsourcing, this implies that external users (i.e. the crowd) can impact the processes and informational output of an internal system (i.e. the institution). Because this system allows information to flow freely throughout the interface, external users can impact the internal system in more than one way. Geiger et al. specify four unique systems (Fig. 1) that can occur in crowdsourced projects, and examine how each system impacts the resulting information.

The first system is the “crowd processing system.” In this system, information is processed unilaterally, where each individual user is given a task to complete. They liken this approach to a “divide and conquer” method, where users engage with the information, but rarely

²⁰ David Geiger, Michael Rosemann, and Erwin Fieft, “Crowdsourcing Information Systems- A Systems Theory Perspective,” *Association for Information Systems Electronic Library* (January 1, 2011), accessed November 2, 2014, http://eprints.qut.edu.au/47466/1/acis_-_2011_-_Crowdsourcing_Information_Systems_-_A_Systems_Theory_Perspective.pdf.

(if at all) with each other. This method is the one most employed by cultural institutions, usually with regard to projects where users are given individual object tags or letters to transcribe.

The second system is the “crowd rating system,” where many individuals make decisions based around one task. The information gathered from this type of system is collected and analyzed as one unit, which is derived from the answers of many individuals. This type of system is usually employed on a digital platform such as Facebook, where users could be asked to like or dislike posts. Although each user is contributing a vote, the conclusion of whether or not a post is “liked” or disliked comes from the aggregated number of votes one way or the other.

The third type of system is the “crowd solving system.” This system is similar to “crowd processing” in that each user is working individually with little or no interaction with the other users, yet it has a fundamental difference. In this system, users are working towards completing the same goal. The crowd solving system attempts to solve a single problem by optimizing the responses of the project’s users by using the “wisdom of crowds” theory.

The innovative crowdsourcing game “FoldIt” is an example of a crowd solving system. The game asks user to modify a specific protein with an end goal of creating the most optimal protein possible. Each participant works to manipulate the same protein structure. Eventually, as participants work through folding the same protein, an ideal configuration is created by averaging together the collective shapes. Through this game scientists have “created an enzyme with more than 18-fold higher activity than the original.”²¹

The last type of system is the “crowd creation” system. In this system, users interact with one another to complete the goals of the project. This allows institutions to use the “wisdom of crowds” theory in a different way. For example, the above crowd solving system does not give

²¹ Jessica Marshall, “Online Gamers Achieve First Crowd-Sourced Redesign of Protein”, *Scientific American*, January 22, 2012, accessed January 4, 2015, <http://www.scientificamerican.com/article/victory-for-crowdsourced-biomolecule2/>.

users access to other participant's solutions to the task at hand, and so, it is up to the institution to aggregate the results into one "best" solution. Crowd creation, on the other hand, allows users to view the content of other users, and so, multiple users are allowed to correct information that had previously been submitted by other users. One of the most popular, and controversial, example of this is the crowd controlled website Wikipedia, where users can manipulate information to include whatever they would like, and can also view information that has been added by others.

Although the aforementioned systems pertain more to the layout of the projects themselves, models also exist for user participation. In her book, *The Participatory Museum*, Nina Simon addresses four models for public participation within the scope of a cultural institution.²² Her models differ from those above because they involve the institution as a contributing factor, rather than as an observer. Although her models do not explicitly refer to crowdsourcing, the theory behind each can be applied to various crowdsourcing projects.

Her first model revolves around contributory projects. These types of projects allow participants to contribute their own data in response to a situation set up by the institution. This may be as simple as encouraging participants to write a comment on a specific exhibition or topic, or as complicated as asking a visitor to bring in materials or write a story surrounding a defined topic. Contributory projects are the easiest to develop, and often involve less staff and forward planning than other models.²³

Her second model, collaboration, depends upon an "institutionally-driven partnership in which staff members work with community partners to develop new programs, exhibitions, or offerings."²⁴ Projects can range from collaborative art programs with local schools to canned food drives or other fundraising events. This model offers a more immersive experience, and

²² Nina Simon, *The Participatory Museum* (San Francisco: Creative Commons Attribution, 2010) 200- 300.

²³ Simon, *The Participatory Museum*, 204.

²⁴ Simon, *The Participatory Museum*, 231.

participants in these projects are often more deeply committed. Due to this commitment, these projects can be much more structured and can encourage participants to take on a more active role in the institution.

Differing from the first two models, co-creation allows the participants of a project to influence its goals and outcomes. Contributory and collaborative projects invite the public to participate in an initiative that has already been defined and produced by the institution. However, when working on a co-created project, the responsibility of the project is split between the museum and its participants. This model engages community involvement and “[allows] cultural institutions to form partnerships that are responsive to the needs of their audience.”²⁵

The final model, proposed by Nina Simon, is the hosted model. In this model the institution is merely a catalyst for a project. Participants become the main collaborates, whereas the institution simply provides its resources.²⁶ Examples of this could include student art shows, where the museum’s only participation is in the hanging of the exhibit. Of the four proposed models, this is the least applicable to crowdsourced projects and so will not be discussed.

Although these models vary in the ways the institutions participate, and the crowd is engaged, there are also similarities between them. In a 2013 article for the Annual Conference of Museums and the Web, these similarities were studied. When evaluating crowdsourcing initiatives by the various models of participations, the authors found that two main themes emerged. Projects either required users to 1) “integrate/enrich/reconfigure existing institutional resources,”²⁷ or 2) “create/contribute novel resources.”²⁸

²⁵ Simon, *The Participatory Museum*, 279.

²⁶ Simon, *The Participatory Museum*, 281.

²⁷ Laura Carletti et al., “Digital Humanities and Crowdsourcing: An Exploration,” *Museums and the Web* (2013), accessed November 5, 2014, <http://mw2013.museumsandtheweb.com/paper/digital-humanities-and-crowdsourcing-an-exploration-4/>.

²⁸ Ibid.

Conclusion

Crowdsourcing utilizes the theory of collective intelligence in order to achieve a goal set forth by an organization. Using various models of user participation, crowdsourced projects engage willing and interested participants from the general public. As these projects gain more attention and application, the way we use and define crowdsourcing expands and changes.

Chapter 2: **Volunteer Motivations for Project Participation**

Why do people choose to participate in crowdsourced projects and how do we keep them interested? This chapter covers the biggest challenge a crowdsourced project faces: how to motivate participants to voluntarily perform the task at hand. In order for these projects to thrive, they need to have a volunteer base willing to do the work, and to achieve this, crowdsourcing projects must be implemented in a way that sparks interest and maintains motivations. This chapter will cover the various reasons people participate in crowdsourced projects, and how the understanding of these motivations can help create a compelling and successful endeavor.

Self-Determination Theory

In 1985, psychologists Richard M. Ryan and Edward L. Deci proposed the Self-Determination Theory, which is an “empirically derived theory of human motivation and personality in social contexts that differentiates motivation in terms of being autonomous and controlled.”²⁹ Ryan and Deci broke down motivation into two basic components: intrinsic, meaning that the participant is “doing something because it is inherently interesting or enjoyable,”³⁰ or extrinsic, meaning that the participant is “doing something because it leads to a separable outcome.”³¹

²⁹ Edward L. Deci and Richard M. Ryan, “Self-Determination Theory,” *The Handbook of Theories of Social Psychology: Volumes 1 and 2*, ed. Paul A. M. Van Lange, Arie W. Kruglanski, and E. Tory Higgins (London: SAGE Publications Ltd, 2012) 416.

³⁰ Richard M. Ryan and Edward L. Deci, “Intrinsic and Extrinsic Motivation: Classic Definitions and New Directions,” *Contemporary Educational Psychology*, 25 (2000) 54, accessed April 9, 2015, http://www.selfdeterminationtheory.org/SDT/documents/2000_RyanDeci_IntExtDefs.pdf.

³¹ Ryan and Deci, “Intrinsic and Extrinsic Motivation: Classic Definitions and New Directions,” 55.

Ryan and Deci proposed that intrinsic motivators exist only in relation to the activity at hand. Their theory is grounded in the fact that everyone has intrinsic motivators, but not everyone is motivated by the same task.³² Due to this variability, the Social-Determination Theory differentiates between, “social and environmental factors that facilitate versus undermine intrinsic motivation.”³³ Depending on the interests of the person, either of these factors can either engage or disengage them. This differentiation is an important distinction as it draws the line between what it means to be intrinsically and extrinsically motivated.

As Ryan and Deci continued to study intrinsic motivators, they began to develop “sub-theories.” One such theory is the Cognitive Evaluation Theory. This theory states that in order for an individual to be perpetually driven by their intrinsic motivation, the task must meet their “psychological need for competence...and sense of autonomy.”³⁴ This means that, in order to keep participants engaged, projects must be developed in a way that makes the user feel competent and self-efficient.

With a thorough understanding of intrinsic motivational factors, the team turned to a new question: why do people perform tasks they have no interest in? They found that extrinsic tasks which are not enjoyment based still have the opportunity to become “Self-Determined,” where an individual will motivate themselves to complete a task. Self-Determination happens when the importance of the task or factors surrounding the task outweighs the consequences of not completing it. They found that by increasing a person’s internalization of a task, “come[s] greater persistence, more positive self-perceptions, and [a] better quality of engagement.”³⁵

³² Ryan and Deci, “Intrinsic and Extrinsic Motivation: Classic Definitions and New Directions,” 54.

³³ Ryan and Deci, “Intrinsic and Extrinsic Motivation: Classic Definitions and New Directions,” 58.

³⁴ Ibid.

³⁵ Ryan and Deci, “Intrinsic and Extrinsic Motivation: Classic Definitions and New Directions,” 61.

As seen in Fig. 2, extrinsic motivation moves along a spectrum towards a goal of internal integration of a given task. The Organismic Integration Theory suggests that the most difficult task to internalize is one that elicits an “amotivational response.” This state describes a person who has no interest or motivations to perform a task. From there, the chart shows how various extrinsic motivators can shape why a task is performed. As the chart progresses, the amount of internal motivation increases, ending with integration, where reason and action are assimilated internally, becoming almost entirely self-determined. Ryan and Deci propose that one reason people begin tasks even if they do not find them intrinsically interesting is due to their connections to others who may have an innate interest in the project or subject. By participating in this way, users can begin to progress along the Organismic Integration chart and eventually may find enjoyment themselves the longer they stick with a task.

When looking at crowdsourced projects through the self-determination theory, motivators such as interest in a specific topic, desire to help out a cause, and enjoyment of an activity are intrinsic factors which may drive someone to participate in a project. Crowdsourced projects are completed in such a timely manner due to these intrinsic factors. Although the most common initial extrinsic factor is money, crowdsourced projects must develop more creative features in order to tap into this specific motivational tool. Many projects will develop ways that users can earn points, badges, or other involvement indicators in order to “rank” users involvement in a more public forum. These small features can help users feel a more self-determined motivation in order to complete objectives, such as scoring the highest amount of points, earning the most badges etc.

The Job Characteristic Model for Work Motivation

Although every model can be broken down into “intrinsic” and “extrinsic” motivational factors, various theories break down these two categories in different ways. For the purposes of this paper, it is important to look at not only motivational theories, but also job-based theories, since crowdsourcing is a job/task based platform.

J. Richard Hackman and Greg R. Oldham proposed the Job Characteristic Model in their 1976 paper, “Motivation through the Design of Work: Test of a Theory.” Their model sought to show how workers were motivated to perform their jobs and “describe the relationship between job characteristics and individual responses to work.”³⁶ They found that employees were most motivated by intrinsic factors, and so, the core ideals of their model state that “an individual experiences positive effect to the extent that he learns (knowledge of results) that he personally (experience responsibility) has performed well on a task he cares about (experienced meaningfulness).”³⁷

In response to these core ideals, the Job Motivation Model relies on three “psychological states” in order for a worker to have continued internal motivation.³⁸ The first state is a worker’s “experienced meaningfulness of the work.” Factors such as skill variety, task identity (tangible results), and task significance all impact how an employee will feel about the meaningfulness of his/her work. The second state is “experienced responsibility for work outcomes.” This state refers to how personally accountable a person feels for the results of their work and the effort they put into it. The final psychological state for maintaining motivation is the worker’s

³⁶ J. Richard Hackman and Greg R. Oldham, “Motivation through the Design of Work: Test of a Theory,” *Organizational Behavior and Performance* 16 (1976): 255, accessed April 10, 2015, http://world.edu/wp-content/uploads/2013/04/1319789168_Hackman-Oldham-1976.pdf.

³⁷ Ibid.

³⁸ Ibid.

“knowledge of their results.” Feedback on how well an employee is performing his/her job in an important step in maintaining motivation.

Worker Motivation Theory for Crowdsourcing

Using Hackman and Oldman’s Job Characteristic Model for Work Motivation, Nicholas Kauffman and his team created a model adapted specifically for crowdsourcing projects. Again, intrinsic and extrinsic motivators are used as a starting point for their model. Although they incorporate the information proposed in the Job Characteristic Model, they place these “job dimensions” under their own categories.

Kauffman et al. signify that there are two “constructs” within intrinsic motivation and three “constructs” within extrinsic motivation. The intrinsic motivators are broken up into “Enjoyment Based Motivation,” and “Community Based Motivation.” Tasks which could be considered enjoyable are included under the enjoyment based construct. Skill variety, task variety, task autonomy, and direct feedback are all included as being necessary for a task to be enjoyable. However, the paper adds “pastime,” or performing a task to “avoid boredom,” to the list.³⁹ Although also intrinsic, Community Based Motivation differs from the previous construct because it is “guided by the platform community.”⁴⁰ Within this construct, Kauffman et al. discuss “Community Identification,” which measures how well a given project aligns with the participant’s norms and values, and “Social Contact,” which evaluates how well a given crowdsourced project facilitates the possibility of interaction within the community.

³⁹ Nicolas Kaufmann, Thimo Schulze, and Daniel Veit, “More than Fun and Money: Worker Motivation in Crowdsourcing- A Study on Mechanical Turk,” *Proceedings of the Seventeenth Americas Conference on Information Systems*, 2011, accessed April 10, 2015, http://161.45.251.150/s-drive/DMORRELL/Mgmt%204990/Crowdsourcing/Kaufmann_et%20al_2011.pdf.

⁴⁰ Ibid.

The Kauffman model also designates three extrinsic motivators. Like the intrinsic motivators above, each construct is broken down into various sections. The first construct is the most common form of an extrinsic motivator: Immediate Payoffs, i.e. payment. The second construct is called “Delayed Payments” and consists of “Signaling,” and “Human Capital Advancement.” The former refers to actions performed to fulfill strategic goals, such as performing a task in order to have a better chance at a promotion, whereas the later refers to the participation in projects which will strengthen skills that could be useful in the future. The final extrinsic motivation is “Social Motivation.” “Action Significance by External Values,” “Action Significance by External Obligations and Norms,” and “Indirect Feedback from the job” are all considered Social Motivators. These external factors explain how workers become motivated by the ways their values fit the values of the organization. They also explain how personal connections can influence a worker’s decision to take on a project, and that participants prefer to have the chance to obtain feedback from other workers.

Kaufmann et al. also performed a study to see how their motivations matched up to the actual motivations of crowdsource project participants. They surveyed 431 people who participated in the popular Amazon platform Mechanical Turk, a website where people can choose to complete 10-15 minute tasks for small amounts of money.⁴¹ Since the platform they studied had a small payout, the highest ranked motivational factor was payment. However, the next four out of five answers were intrinsic motivators, proving that interest in a topic, rather than extrinsic motivators, will have a higher influence in choosing to participate in a project.

⁴¹ “Welcome,” Amazon’s Mechanical Turk, last updated 2015, accessed April 11, 2015, <https://www.mturk.com/mturk/welcome>.

Model of Text Correction Motivations

In 2012, a new group of researchers investigated the motivations of crowdsource-specific projects. Their study differed from that done by Kauffman et al. because the project chosen centered on a text correction based task, and payment was not a contributing factor. In this way, their study more closely related to general crowdsourcing practices. The results revealed that intrinsic motivators were the driving factor behind participation, and these findings were employed in an updated version of the Motivation Chart.

In this new model, social motivation is seen as the key factor, although, many of the constructs listed in the other motivational models can still be found. Other than the exclusion of monetary reward, the chart adds the construct of “Advocacy,” an idea taken from a Pennsylvania State University study on motivations related to Citizen-Science Projects, is added to this chart. Advocacy is the idea that groups as a collective are motivated by the issues they learn about throughout the project. The Penn State study found that users of a Citizen-Science based ecology project “embraced the opportunity to understand better the issues pertaining to environmental policy that affected them and their communities through their participation in the citizen science projects...”⁴² They also learned that, although advocacy was not a driving factor for the volunteers when they began the project, their interest in the ecological advocacy they were volunteering for grew with their continued participation.⁴³

Another change to the Motivation Chart is the expansion of the Community Based Motivation definition to include Altruism, Collectivism, and Principialism. Altruistic motivations

⁴² Dana Rotman et al., “Dynamic Changes in Motivation in Collaborative Citizen- Science Projects,” *CSCW* (February, 2012) accessed April 11, 2015, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.228.2268&rep=rep1&type=pdf>.

⁴³ Ibid.

propel a user to participate in order to benefit individuals other than themselves.⁴⁴ Collectivism, like altruism, deals with the motivation to help others, although, rather than aiding individuals, collectivism seeks to benefit entire groups at a time. The final type of community based motivations is principalism, where users participate in projects because they want to help serve a cause and benefit the greater good. For example,

Calls to act for the common good often appeal to principle. We are told that it is our duty to vote, that it is not right to leave our litter in the park for someone else to clean up, that we should give our “fair share” to the United Way, that we help to improve the community in which we live.⁴⁵

All of these constructs, although they outwardly affect other individuals, are considered intrinsic motivators because participants are acting of their own will to help others.

Conclusion

As discovered in the previously mentioned Penn State study, volunteers initially acknowledged intrinsic motivators as reasons they chose to join the project. However, as they continued to participate in the project, they revealed secondary motivational factors for repeat volunteerism. The highest rated secondary goal was listed as “recognition and attribution.”⁴⁶ Participants found that being acknowledge for their work and effort played a major role in their continued participation in the project, demonstrating that although intrinsic motivators may have initially influenced them to participate in the project, external motivators played a major part in keeping participants coming back.

⁴⁴ C. Daniel Batson, Nadia Ahmad, and Jo-Ann Tsang, “Four Motives for Community Involvement,” *Journal of Social Issues*, Vol. 58 No. 3 (2002): 429, accessed April 12, 2015, <http://www.baylor.edu/content/services/document.php/25043>.

⁴⁵ Ibid.

⁴⁶ Dana Rotman et al., “Dynamic Changes in Motivation in Collaborative Citizen- Science Projects.”

Understanding the motivations of crowdsourcing participants is important in creating a successful project. Overwhelming evidence shows that users are drawn into the project by their interests and other intrinsic motivators, meaning the development of an engaging project is paramount to the participation of new users. However, it is also important to develop engaging ways to keep users coming back and participating. Offering rewards, badges, message boards, and other incentives, along with forms of feedback, provides an outlet for users to continue to foster their interests as well as benefit the institution at hand. The application of these motivational constructs in relation to specific crowdsourced projects will be discussed in the next chapter.

Chapter 3:

Types of Crowdsourcing: Project implementation and Use

Now that a basic understanding of crowdsourcing is in place, various types of crowdsourcing projects can be explored. Crowdsourcing has become an umbrella term for any of the six standardized project types involving public participation. These categorizations were first introduced by Johan Oomen and Lora Aroyo, who separated crowdsourced projects into the following types: Co-Curation, Complementing Collections, Correction and Transcription, Contextualization, Classification, and Crowdfunding. This chapter will introduce and explain each of these, as well as explore the implication and impacts of each project type using examples from cultural institutions around the world.

Co-Curation

Co-Curation is defined as “using inspiration/experience of non-professional curators to create (Web) exhibitions.”⁴⁷ These projects rely heavily on the “Wisdom of Crowds” theory, and utilize the crowd in order to create a cohesive, aggregated decision in regard to the curation of an exhibition. Participation is vital to the success of these exhibitions, as museums rely on the public to vote on themes, exhibition designs and/or objects for inclusion.

⁴⁷ Johan Oomen and Lora Aroyo, “Crowdsourcing in the Cultural Heritage Domain: Opportunities and Challenges,” *Proceedings of the 5th International Conference on Communities and Technologies*, (July 2011), accessed January 18, 2015, http://www.iisi.de/fileadmin/IISI/upload/2011/p138_oomen.pdf.

Click! A Crowd-Curated Exhibition

In 2008, the Brooklyn Museum was inspired to test this idea of collective intelligence by creating an exhibit curated solely by its audience.⁴⁸ They were interested in the idea that a large group could make wiser decisions regarding art than an individual (in this case, the museum's curators). In order for this exhibition to truly test the ideas put forth by James Surowiecki, the project needed to be designed in a way that would maintain "diversity and independence." As described in Chapter One, these two elements are important for a crowd to be considered "wise." The museum decided upon a general theme for the exhibit entitled *Click! A Crowd-Curated Exhibition*, and staged a three-part project to test this theory.

The project began in March, when the museum conducted an open call for artists to electronically submit a piece of photography they felt related to the theme "Changing Faces of Brooklyn," along with an artist's statement about their piece. During the open call, the *Click!* website was open only for submissions, and once a work was submitted, it could not be previewed on the website. In a post reviewing the project, Shelly Bernstein (Vice Director of Digital Engagement at the Brooklyn Museum, and the exhibit's organizer) stated:

...photographers were asked to make decisions for themselves without basing it on what they could see others doing. We selected a theme...that could have a wide variety of interpretations...Both aspects, variety of interpretation and the blind call, were designed to foster diversity and independence in the submitted works.⁴⁹

The second phase of the project, the "Evaluation Period," was held from April 1 to May 23, 2008.⁵⁰ Users were asked to log onto the *Click!* exhibition platform to vote for their favorite

⁴⁸ "Click! A Crowd-Curated Exhibition," Brooklyn Museum, accessed December 30, 2014, <http://www.brooklynmuseum.org/exhibitions/click/>.

⁴⁹ Shelley Bernstein, "Minimizing Influence," *BKM Tech Blog*, March 31, 2008, accessed December 30, 2014, <http://www.brooklynmuseum.org/community/blogosphere/2008/03/31/minimizing-influence/>.

⁵⁰ "Click! A Crowd-Curated Exhibition: Quick Facts," Brooklyn Museum, accessed December 30, 2014, http://www.brooklynmuseum.org/exhibitions/click/quick_facts.php.

images, taking into account the aesthetics, photographic technique, and the “work’s relevancy to the exhibition’s theme.”⁵¹ In addition, evaluators were asked to answer a few questions regarding their prior knowledge and location. In order to determine their knowledge level, the museum set broad criteria for each category. For example, an “[e]xpert evaluator defined themselves as having extensive knowledge in the field through working in an arts-related profession and/or possessing an advanced degree in art/art history.”⁵²

In order to be successful, the project needed to ensure that it was reaching a wide and diverse enough audience. In other words, the Brooklyn Museum had to figure out a way to get people who identified as having “little to no experience” involved in the project. They began by printing postcards advertising the exhibition process and handing them out to local areas around Brooklyn. “Physical card distribution is still a major method of communication thorough the Brooklyn communities. Many of the local mom-and-pop establishments like cafes and bookstores have a place for card drops and announcements.”⁵³ After they had physically reached out to areas in the Brooklyn community, the staff took to the Internet, and posted about the project on websites and blogs based around an interest in photography, such as the “Brooklyn groups on Flickr”, and the blog community known as “The Gowanus Lounge.”⁵⁴

Like the open call before it, the voting platform was designed to minimize any information that may sway a participant’s vote. In order to do this, a number of technological features were designed into the platform. First, the developers made sure that each URL address was suppressed, meaning that people were not able to link to their favorite images. This

⁵¹ Brooklyn Museum, “*Click! A Crowd-Curated Exhibition: Quick Facts.*”

⁵² “*Click! A Crowd-Curated Exhibition: Top 10 Compared.*” Brooklyn Museum, accessed January 17, 2015, <http://www.brooklynmuseum.org/exhibitions/click/comparison.php>.

⁵³ Shelley Bernstein, “Click! Get the Word Out,” *BKM Tech Blog*, March 7, 2008, accessed April 3, 2015, <http://www.brooklynmuseum.org/community/blogosphere/2008/03/31/minimizing-influence/>.

⁵⁴ Bernstein, “Click! Get the Word Out.”

prevented artists or friends from sending out links in order to stack votes in their favor. The second design feature omitted the name of the artist who had taken the photograph. Instead, users would only be able to view the image, its title, and the artist's description. This prohibited people from voting on an image simply based on the artist. Both of these techniques ensured that the voting process would be independent and as fair as possible.

The exclusivity of these technologically designed elements created unique challenges for the platform designers. User participation was critical to the success of the project, and so, there had to be some sort of interaction that would keep users engaged without compromising the results. One solution to this issue was the method with which the designers chose to display the images on the interface. On the side of the image being viewed, the platform allowed users to view two new images so that they could see a preview of other images that were available for voting. However, in order to curb “unwanted influence,”⁵⁵ the preview images would be replaced every time the page was refreshed, and neither image was accessible. This meant that if a user was to see a preview image he/she wanted to vote for, he/she would have to continue through the randomized photographs until he/she encountered that image, rather than simply clicking on the preview in order to be brought to its voting page. In addition, a comment section was added for each image. Although users were able to leave comments on the exhibition website, they were not released for public viewing until after the exhibition had opened. This allowed users the opportunity to connect with the artwork, but still allowed the independence of each voter to remain intact.

Once the evaluation period had ended, the works were ranked according to the data from the exhibition platform. 389 images had been submitted, and 3,344 users had evaluated the

⁵⁵ Bernstein, “Minimizing Influence.”

photographs.⁵⁶ Of those who had evaluated the works, 25.5% described themselves as experts, 23.3% described themselves as having some prior knowledge, 22.6% described themselves as having more than a little prior knowledge, 22.5% described themselves as above average, and 6.1% described themselves as having no prior knowledge of art or exhibitions.⁵⁷ Of the photographs submitted, only the top 20% were chosen to be mounted in the exhibition, which ran from June 27, 2008 until August 10, 2008.⁵⁸ A full breakdown depicting the results for the *Click!* Exhibition can be found in Appendix A.

In June of 2008, a panel consisting of Shelley Bernstein, James Surowiecki, Jeff Howe, and the Brooklyn Museum's John and Barbara Vogelstein Curator of Contemporary Art, Eugenie Tsai, spoke about the project at FIGMENT, an open forum for the arts held each year at Governors Island, NY.⁵⁹ The participants discussed the project and the findings of the museum, as well as some of the positives and negatives that came about from various steps in the curation process.

One of the most prominent advantages of the curation process was the engagement of users with the art work. When asked about her process as a curator, Eugenie Tsai, discussed how, due to the overwhelming amount of material she receives, she rarely spends time reading things like artists' statements when evaluating a work. Instead, rather than looking at the image as a work of art, she evaluates the intricacies of the work. She states, "Scale is important. Presentation is important. Is it in a matted frame? What kind of frame? What's the scale? Is it mounted on aluminum? You know, all of these things come into it. So it's not just the image, it's

⁵⁶ "Click! A Crowd-Curated Exhibition: Evaluator/Evaluation Statistics," Brooklyn Museum, accessed January 2, 2015, <http://www.brooklynmuseum.org/exhibitions/click/stats.php>.

⁵⁷ Ibid.

⁵⁸ Ibid.

⁵⁹ Shelley Bernstein, Jeff Howe, James Surowiecki, Eugeni Tsai, "Click! A Crowd-Sourced Exhibition: A Panel Discussion," FIGMENT Celebration, Governors Island, June 27-29, 2008, accessed January 17, 2015, <http://www.brooklynmuseum.org/exhibitions/click/podcast.php>.

so much more than that.”⁶⁰ Users who participated in the exhibition, however, were only given the image and the artist’s statement. Therefore, when voting on a photograph, aesthetics and interpretation, rather than logistics, were the deciding factors for participants. She went on to discuss the success of the project, recounting, “[Shelly was] saying: ‘Oh. People are only looking at these for 22 seconds.’ And I was like, ‘God, that’s an amazing amount of time!’... Someone’s done a study saying that most people look at a work of art in a museum for 6 seconds on average.”⁶¹

When people are given the opportunity to involve themselves in the exhibition process, they take a more sincere approach to interacting with the art. In addition, the fact that participants were able to vote privately, and their choices were not shared with the other users, allowed the selection process to be as close as possible to “a real opinion insulated from the opinions of others.”⁶² This allowed users to truly invest in the opinions they were giving and engage with the works on a more personal level.

So how did the crowd stack up against the experts? When reporting the findings of their experiment, the Brooklyn Museum put together a portal showing the top ten images in each knowledge level. The website allows you to search by image to see where it fell (if at all) within the other knowledge levels. For example the image *Dubrow’s Cafeteria* by Marcia Bricker Halperin was the number one image chosen by users who designated themselves as “experts.” The Brooklyn Museum’s “Top 10 Compared” portal shows that this same image was the number one image chosen by those users with “above average knowledge,” the third most popular image chosen by users with “more than a little knowledge,” and the fifth most popular image amongst

⁶⁰ Tsai, “*Click! A Crowd-Sourced Exhibition: A Panel Discussion.*”

⁶¹ Tsai, “*Click! A Crowd-Sourced Exhibition: A Panel Discussion.*”

⁶² Surowiecki, “*Click! A Crowd-Sourced Exhibition: A Panel Discussion.*”

users with both “some knowledge,” and “no knowledge.” *Dubrow’s Cafeteria* is one of three images to show up across all knowledge levels.

However, there are inconsistencies among the top ten images for each knowledge group. The image *Domelights*, by Nate Dorr, came up as the sixth most popular image chosen by experts, but is not ranked in the top ten of any other knowledge category. Similarly, both *9:15pm* by Etienne Frossard, and *Anticipation*, by Jesse Ross, are ranked amongst the top ten by those with “no knowledge” and “some knowledge,” but neither appears in the top ten of any other knowledge category.

When comparing the overall top ten images to the top ten of each knowledge category, only four were ranked highest by those with “no knowledge,” whereas, seven of the top ten “expert” ranked images are included in the overall top ten. While this seems to prove that the experts have the advantage over the knowledge of the crowd, if you combine the results from two lowest level knowledge groups, they accurately predict seven out of the top ten images- the same number of images as the expert group. In his post on the Brooklyn Museum’s blog, James Surowiecki writes, “To me, this is really the most striking result of the show, because it suggests (though it doesn’t prove) that at least in some mediums, the gap between popular and elite taste may be smaller than we think.”⁶³

The Brooklyn Museum’s crowd-curated exhibition, *Click!*, set out to perform an experiment regarding the wisdom of the crowd. By monitoring the process and designing interactions in very specific ways, they were able to control how the crowd responded and thought independently about the exhibition. The final results show that the crowd as a whole was able to choose seven of the images ranked highest by “experts,” and proves that their

⁶³ James Surowiecki, “Reflections on *Click!*,” *BKM Tech Blog*, August 8, 2008, accessed January 17, 2014, <http://www.brooklynmuseum.org/community/blogosphere/2008/08/08/reflections-on-click-by-james-surowiecki/>.

collective, popular opinion is more similar to those of the experts than originally expected. When asked if the exhibition was a success, and how the crowd stacked up to a professional curator, Eugenie Tsai said, “This had a specific, clearly stated goal, and I think it fulfilled its goal beautifully.”⁶⁴

Complementing Collection

Complementing Collection projects allow users to actively search for, and add, objects to preexisting exhibits or collections. Through these projects, participants are given the opportunity to connect with the museum in a more personal and thoughtful way by contributing personal stories or objects. Projects using this model differ from standard donation practices because participants are asked to add objects related to a particular theme or initiative. Additionally, objects loaned to the institution in support of these projects may be kept temporary in order to support the exhibition being created, and may be returned afterwards.

“*Make History*”

In May of 2009, the 9/11 Memorial Museum commissioned the media design firm Local Projects to create a web-based portal for their project entitled “Make History.”⁶⁵ The project asks users to submit their stories, videos or pictures in order to create a “collective telling of the events of 9/11 through the eyes of those who experienced it, both at the attack site and around the world.”⁶⁶ In order to truly create a collective re-telling, “Make History” seeks to draw on the stories and experiences of people from a variety of viewpoints, ethnicities, and places. It is

⁶⁴ Tsai, “Click! *A Crowd-Sourced Exhibition: A Panel Discussion.*”

⁶⁵ “Make History,” Local Projects-Projects/ 9/11 Memorial, accessed March 28, 2015, <http://localprojects.net/clients/page/5/?client=911-memorial#4>.

⁶⁶ Michael Frazier, “Make History Today,” *The Memo Blog*, April 4, 2014, accessed March 28, 2015, <http://www.911memorial.org/blog/make-history-today>.

important to note that participants in this project agree to have their stories, pictures, and videos, added to the 9/11 Memorial and Museum's digital archive to be saved in perpetuity and used as the museum sees fit.⁶⁷ By creating an open platform, the museum is able to actively acquire for their archives and collection, drawing depth, knowledge and insight into the real world impact of this disastrous event.

Unlike other crowdsourced projects, which require staff members to structure, contribute, and provide oversight, "Make History" is a project whose success relies heavily upon its participants, although the staff is used to verify information once it has been submitted. Since the goal is to create a comprehensive narrative, a diverse range of stories and participants from around the globe need to be involved in the process of contribution. In order to achieve this, the project provides platforms for submission both in the museum itself and online.

The "Make History" website is the only location where all three forms of submission can be added to the project in order to reach as many people as possible. The main purpose of the website, which also acts as a searchable archival database, is to provide a platform for people to contribute regardless of their location, although it is also designed with unique features to showcase the impact of "Make History" by featuring previous contributions. The portal contains an interactive map of New York City and a timeline of events, where users can view crowdsourced images depicting scenes from the events of 9/11 compared with their modern day equivalents. In keeping with the goals of the project, the website enables users to read stories submitted in relation to a specific event on the time line, or a picture on the map.

The project's impact moves beyond its internet component. At the museum, visitors are encouraged to record their memories and feelings relating to September 11, 2001. Built as a

⁶⁷ Lynn Rasic, "'Make History' Website Honored by Webby Awards Academy," *The Memo Blog*, April 13, 2014, accessed March 28, 2015, <http://www.911memorial.org/blog/make-history-web-site-honored-webby-awards-academy>.

permanent component to the main exhibition, four audio and visual recording booths are provided in a secluded room to serve the “Make History” initiative. The single-person, sound-proof rooms, provide an atmosphere where visitors can retell their stories in a truly solitary and non-judgmental setting, making the experience as inviting as possible. Once inside, the “audio and video recording booths ask guests a series of questions, including where they were on 9/11, and then collectively curates their answers.”⁶⁸ The submissions of this project can be seen in the room outside these recording booths, where video footage of previously recorded accounts is played so that participants can view other submissions after recording their own. “Through the strategic use of technology, guests are drawn in and the memorial’s impact and reach is greatly expanded.”⁶⁹ By allowing museum patrons the chance to interact with the objects and to tell their own stories, the 9/11 Memorial & Museum has created a vehicle for the public to personally contribute to the collections of the museum.

In April of 2014, the website was selected as “an official honoree for the 14th Webby Awards,” an award given by the Webby Awards Academy to web developments of extraordinary quality.⁷⁰ As of July 2014, Make History had over 1,000 pictures and videos, as well as 300 stories.⁷¹ The success of these submissions prompted the museum to create a mobile app where, much like the website, users can view submitted pictures in relation to their real world locations. The project has been deemed a great success, and the museum hopes to continue to collect and house memories from this disastrous event.

⁶⁸ Elizabeth Alton, “How Technology is Being Used to Personalize the 9/11 Memorial Museum,” *Entertainment Designer*, July 27, 2104, accessed March 28, 2015, <http://entertainmentdesigner.com/news/museum-design-news/how-technology-is-being-used-to-personalize-the-911-memorial-museum/>.

⁶⁹ Elizabeth Alton, “How Technology is Being Used to Personalize the 9/11 Memorial Museum.”

⁷⁰ Lynn Rasic, “‘Make History’ Website Honored by Webby Awards Academy.”

⁷¹ “Online Database of Photos Reflect on 9/11 Aftermath,” *The Memo Blog*, July 16, 2014, accessed March 29, 2015, <http://www.911memorial.org/blog/online-database-photos-reflect-911-aftermath>.

Correction and Transcription

Correction and Transcription refers to projects that invite participants to, as the name implies, correct or transcribe information from a given source. This type of project is the least interactive, as the user participates using the crowd processing system, as described in Chapter One of this paper. This type of project is arguably the most common type of crowd sourcing project due to its usability, easy up-keep, and versatility. By allowing members of the public to transcribe specimen labels, historic ledgers, menus, or other ephemera, the institution benefits from inviting the public to complete a task which would otherwise require a large amount of staff time.

“Notes from Nature”

This section will explore “Notes from Nature,” a transcription project which invites users to transcribe various scientific documents in an effort to make museum collections digitally available to the public, as well as the scientific community as a whole.

Science museums have a unique opportunity to engage the public participation. These participants are colloquially termed “citizen scientists.” A citizen scientist is defined as “a volunteer who collects and/or processes data as part of a scientific enquiry.”⁷² The idea behind citizen science has been around since the 1900’s, when the National Audubon Society began holding the Christmas Bird Count,⁷³ a program that encourages volunteers to count the number and species of birds found in their area during a designated time.⁷⁴ Since then, citizen science programs have appeared around the world in a multitude of scientific communities and

⁷² Jonathan Silvertown, “A New Dawn for Citizen Science,” *Trends in Ecology and Evolution*, 24 no.9, (July 2009) 467, accessed February 18, 2015, <http://static1.squarespace.com/static/53ef7f3be4b07998dc387a48/t/53f0b673e4b06ae6d5b06e94/1408284275521/Silvertown+TREE+2009+Citizen+Science.pdf>.

⁷³ Silvertown, “A New Dawn for Citizen Science,” 468.

⁷⁴ Geoff Lebaron, “Christmas Bird Count,” *Audubon Science* (2012), accessed February 15, 2015, http://birds.audubon.org/sites/default/files/documents/cbc_one_pager_2012-10-5-12.pdf.

organizations. Recognizing the countless ways technology allows information to be linked and gathered, science museums have embraced the idea of using citizen science to digitize and analyze information from scientific endeavors related to specimens in a variety of collections. When brought together, this information provides a comprehensive view of the biodiversity of our planet across the ages, and allows scientists and researchers to access data that was previously only accessible by museum staff.

In July of 2007,⁷⁵ a group called the Citizen Science Alliance launched an Alfred P. Sloan Foundation funded project entitled “The Galaxy Zoo.”⁷⁶ The Galaxy Zoo project asked participants to classify galaxies by their size and shape using images which had been captured by the Sloan Digital Sky Survey.⁷⁷ The expectations for the project were low; however, within twenty-four hours the project’s developers were “stunned to be receiving almost 70,000 classifications an hour.”⁷⁸ Building upon the success of that first project, the Citizen Science Alliance has since created a portal called the “Zooniverse,” which now houses over twenty citizen science projects from around the globe.

One of the largest Correction and Transcription projects Zooniverse hosts is “Notes from Nature,” a project seeking to digitize natural history collections at institutions around the world, gathering information into a cohesive database for scientific use.⁷⁹ In April of 2013, a group of organizations consisting of the South Eastern Regional Network of Expertise and Collections (SERNEC), the University of Colorado Museum of Natural History, the Natural History

⁷⁵ “Purpose,” Zooniverse- About Us, last modified 2013, accessed February 18, 2015, <https://www.zooniverse.org/about>.

⁷⁶ “A Call for Proposals,” Citizen Science Alliance, accessed February 18, 2015, <http://www.citizensciencealliance.org/proposals.html>

⁷⁷ “History of Galaxy Zoo,” Galaxy Zoo, accessed February 19, 2015, http://www.galaxyzoo.org/?utm_source=Zooniverse%20Home&utm_medium=Web&utm_campaign=Homepage%20Catalogue#/storyhttp://www.galaxyzoo.org/?utm_source=Zooniverse%20Home&utm_medium=Web&utm_campaign=Homepage%20Catalogue#/story.

⁷⁸ Galaxy Zoo, “History of Galaxy Zoo.”

⁷⁹ “About,” Notes from Nature, accessed February 16, 2015, <http://www.notesfromnature.org/#/about>.

Museum of London, and the University of California, Berkeley's "Calbug" project (which supports California's nine most prominent insect collections) teamed up to create a collaborative project that would allow information from all of their institutions to be transcribed simultaneously.⁸⁰

"Notes from Nature" finally became a reality with the help of Zooniverse and Vizzuality, a Citizen Science Alliance "partner that specializes in biodiversity visualization."⁸¹

When the project first opened, users were asked to transcribe "images, labels, and ledgers from museum collections and the biologists who maintain those collections,"⁸² and were able to choose from one of three portals relating to the collections of the institutions participating in the project. The first portal contained transcription tasks related to the 12 million plant specimens found across SERNEC's 222 Herbarium;⁸³ the second portal contained tasks relating to California's CALBUG initiative; and the third portal contained tasks relating to ornithological (bird) collections at London's Natural History Museum. In October of 2013, the Microfungi Collection Consortium, a "partnership of 35 institutions across the U.S.,"⁸⁴ added a fourth portal to the project containing transcription tasks relating to their Macro-fungi collection.⁸⁵ By creating separate portals for each of the project types, participants are able to transcribe content interesting to them, and can easily move between subject matter should they desire to do so.

⁸⁰ "U. Va. Library, Mountain Lake Tap Crowds To Digitize Records of Bugs, Plants And Birds," *University of Virginia*, 2013, accessed February 20, 2015, <http://newswise.com/articles/u-va-library-mountain-lake-tap-crowds-to-digitize-records-of-bugs-plants-and-birds>.

⁸¹ Andrew Hill et al., "The Notes from Nature Tool for Unlocking Biodiversity Records from Museum records Through Citizen Science," *ZooKeys* 209, (July 20, 2012): 219-233, accessed February 20, 2015, <http://zookeys.pensoft.net/articles.php?id=2910>.

⁸² "SERNEC Herbarium," Notes from Nature, accessed February 20, 2015, <http://www.notesfromnature.org/#/archives/herbarium>.

⁸³ Notes from Nature, "SERNEC Herbarium."

⁸⁴ Andrew Sallans, "Microfungi Added to Notes from Nature!," *The Notes from Nature Blog*, October 29, 2013, accessed February 20, 2015, <http://blog.notesfromnature.org/2013/10/29/macromfungi-added-to-notes-from-nature/>.

⁸⁵ Sallans, "Microfungi Added to Notes from Nature!"

If a participant has chosen to work with the Herbarium, CALBUG, or Macro-Fungi collection, they are given an image of a specimen or label and asked questions relating to the content on each. For example, if a user chooses to work within the Herbarium collection, they may be shown a plant specimen with its label affixed in the corner.

The portal allows the user to zoom in and move the specimen around the screen in order to locate the information needed to answer the transcription questions. Below the picture, a questions field is generated with a question about the specimen. For example, the user may be asked, “In what county was this specimen found?” This information can be found on the specimen label located at the bottom of the screen. If information cannot be found, or the information is unreadable, users have the option to skip the question or the specimen entirely.

Should a user wish to work within the Ornithological Portal, the transcription tasks will differ from those detailed above. Users will no longer be given specimen data, but instead will be tasked with the transcription of field ledgers. In order to make the task more manageable, users are presented with parts of document, rather than the whole ledger at once. They are first asked to transcribe the page number of the document with which they will be working. Next, the user will be presented with the majority of the document, which will contain the date, location, sighting, registration number, and sex of the birds sighted.

Unlike the other interfaces, the ledger interface does not contain a transcription field at the bottom of the screen. This is because each row contains information on a different bird sighting, and the user’s task is to transcribe the entire page, one row at a time. By clicking on the “new row” button, users select the row they wish to transcribe, and are then shown a

transcription box. Once the row is transcribed, users can continue to make progress down the page.⁸⁶

As participants work through the database, their completed specimens are logged through their user profile. As they complete more specimens, they are awarded “badges,” which act as “marks of accomplishment that can be kept on the ‘Notes from Nature’ site and shared with others broadly via other social media sites.”⁸⁷ Aside from this motivational measure, Notes from Nature also provides regular feedback and communication including how the project is going, maps containing completed specimens, and other community milestones. Users also have the ability to interact with both scientists and other users, to discuss their transcriptions, and any problems they may be facing, fostering a dynamic and immersive experience.

Due to the popularity of “Notes from Nature,” Citizen Science Meet-ups and “Hack-A-Thons,” where participants can meet and transcribe together, have developed around the country. These events provide an interactive community atmosphere, where participants are able to meet with other users in their area and discuss their interests in the project and science as a whole.

Although the public portal for “Notes from Nature” stems from a need to simplify the digitization process so that anyone can complete the tasks required, a majority of the process is still in the hands of the museum collections that run them. The museum staff in charge of these projects must still digitize a majority of the specimens themselves, run accuracy tests, and implement the datasets once completed by the public.

⁸⁶ Chris Snyder, “Notes from Nature- Natural History Museum Interface Tutorial” (YouTube video), posted August 12, 2013, accessed February 21, 2015, <https://www.youtube.com/watch?v=-pYIUmGxCOs>.

⁸⁷ Hill et al., “The Notes from Nature Tool for Unlocking Biodiversity Records from Museum Records Through Citizen Science.”

To begin, an accuracy standard for the project had to be set in order to determine “accuracy, speed, and required training of the volunteer community to create data...”⁸⁸ In the fall of 2011, the project team chose one hundred ledger page images which had previously been databased, and asked trained museum staff to re-transcribe them.⁸⁹ Once statistics had been gathered regarding the cost, transcription rate, and accuracy, the team asked volunteers to transcribe the same information. By comparing the transcription sets completed by staff and volunteers, they were able to determine the statistical information needed to implement the project.

Once the general usage data had been determined, the team looked at the interface for the project itself. As a Zooniverse project, “Notes from Nature” had the benefit of learning from previous successful citizen science projects, and was able to develop an interface that would entice people to transcribe their data. For example, ensuring that the platform was operational through any internet browser was important for accessibility. In addition, each collection contains a short tutorial in order to “demonstrate the purpose of accurate transcription, but more importantly [to] explain how and why the data [is] important to scientists.”⁹⁰ As discussed in the paper “Galaxy Zoo: Exploring the Motivations of Citizen Science Volunteers,” tutorials are important features when used to educate the participants of the importance and value of the project and work as a whole.⁹¹ These design choices helped to motivate participants and create an easily accessible program for maximum efficiency.

⁸⁸ Ibid.

⁸⁹ Ibid.

⁹⁰ Hill et al., “The Notes from Nature Tool for Unlocking Biodiversity Records from Museum Records Through Citizen Science.”

⁹¹ M. Jordan Raddick et al., “Galaxy Zoo: Exploring the Motivations of Citizen Science Volunteers,” *Astronomy Education Review*, 9 no. 1, (February 18, 2010), accessed February 20, 2015, <http://portico.org/stable?au=pgg3ztfdp8z>.

Next, a work flow had to be created in order to capture, upload, and evaluate the data needed and completed through the project. To this end, “Notes from Nature” is not a completely public process. Museum staff is required to photograph the specimens, labels and ledger pages that need to be transcribed and upload these images into the corresponding “Notes from Nature” database so that they may be available on the platform.

Once the data is uploaded, each task is replicated three times. This procedure is put forth in a paper by the creators of “Notes from Nature:”

Following three independent transcriptions of a record, data is reconciled and returned to the original data provider. Records sent back to the provider can be fully complete, partially complete, or fully incomplete. Fully complete records are those where all citizen scientist volunteers (CS) agree on every field of the record. Partial records include only those fields where CS agree. Fully incomplete records indicate that volunteers were largely unable to transcribe the record consistently.⁹²

By having three separate users transcribe the same dataset, inaccuracies are easily spotted and trained museum staff can easily go back to resolve any issues. After the replications have occurred, the metadata for each record can be downloaded by the host institutions and integrated back into their own database systems.

As of April 3, 2015, “Notes from Nature” had a total of 7,216 volunteers who had contributed to 1,080,860 transcriptions across the project.⁹³ The draw of many citizen science projects is the accessibility of the information; users can participate in scientific initiatives in the comfort of their own home. Similarly, anyone can access the “Notes for Nature” portal, no matter their distance to the actual museum collection. Due to the collaborative nature of this

⁹²Hill et al., “The Notes from Nature Tool for Unlocking Biodiversity Records from Museum Records Through Citizen Science.”

⁹³Notes from Nature, accessed April 3, 2015, <http://www.notesfromnature.org/#/>.

project, participants can view and transcribe specimens and collections material from museums around the world.

Contextualization

With contextualized projects, users are asked to add additional information into an already existing database. These projects allow users to interact, to a certain degree, by facilitating the use of the “wisdom of crowds” theory in order to edit preexisting information into its most complete and correct form. Contextualized projects, although similar, differ from Complementing Collection projects because the information collected gives further information to an object or photograph already owned by the institution. In contrast, with Complementing Collection projects, anything collected, whether object, picture, or story, becomes a collection item itself. Although contextualized projects are not usually employed by cultural institutions, they can be good projects for those on a smaller budget.

Peoria Historical Society

The Peoria Historical Society in Peoria, Illinois, has been using its web presence as a way to crowdsource additional information from the general public. With limited resources, the Historical Society has a variety of mediums through which participants can “ask questions, give information, and upload images.”⁹⁴ Through their main website, as well as public account websites such as HistoryPin and Facebook, the Historical Society strives to invite the community to explore their collections and create a dialogue which will help strengthen the integration of this relationship.

⁹⁴Robert L. Killion, “Crowdsourcing Thesis Survey Result,” survey by Danielle Pace, August 2014.

The most well-known of these projects is the contextualization of their permanent collection through the main website. The “Collections” portion of their website contains a search feature where users can access information about specific objects in their database. Once an object is selected, users can view and read previously available information about the object. If, while reading through this information, the user realizes that they know a fact about the object that is not mentioned, he/she has the option to click on the “I know something!” tab to share their knowledge. In addition, users have the ability to tag the objects to improve searching within the website portal.

Knowing that visitors would most likely interact with them on social media, rather than searching through the collections database, the Historical Society employed new ways of interacting with their audience. The first is hosted on the HistoryPin website, a social platform where organizations can create pages to post historical images linked directly to present day maps. The website allows organizations to create virtual exhibitions, as well as provide suggestions for guided tours of the area. HistoryPin also contains features designed to interact with the site visitors by allowing users to create profiles and compile images from any organization. Like the Peoria Historical Society’s collections portal, HistoryPin allows users to add comments, questions, or additional information to the pictures on the site.

The second form of social media employed by the Historical Society in a contextual manner is Facebook. Today, Facebook is a tool used by many museums and cultural institutions to connect with the public. Like many other institutions, the Society uses their Facebook page to create a dialogue with the community. They encourage them to ask questions or share any information they may have relating to the museum or its collections. Facebook is also a vital tool in advertising the various platforms on which material from the museum can be found. The

museum relies heavily on outreach through “Facebook, blog[s], newsletters, newspaper articles [and] website[s]”⁹⁵ in order to inform the public of their ongoing interest in collecting information from the community. Additional outreach measures are planned, but these general social media outlets provide an easy-to-use source to disseminate information until additional funding can be procured.

Although Robert L. Killion, the Curator for Collections and Technology, has seen increased interest in the viewing of collections materials through HistoryPin, Facebook, and the Collections website, he has also found challenges with engaging the public using these platforms. For instance, gathering information from Facebook is difficult given the quickness with which posts can be lost, and when looking at the statistics from HistoryPin, the Historical Society has found that most users are unaware that they are encouraged to share their own information. The site is used heavily, but only to view images, rather than to interact with the museum and each other. Mr. Killion believes that this can be resolved by continually reassuring the public that they are a vital source of information: “... we (the museum community) must work to change the idea that we are the holders and disseminators of a knowledge and work on making the public understand that collectively they hold more knowledge than we do and that we need [their] help.”⁹⁶

Classification

Classification projects differ from those already discussed because their goal is not to publicly correct or add informative materials. Instead, these types of projects rely on users to

⁹⁵ Robert L. Killion, “Crowdsourcing Thesis Survey.”

⁹⁶ Robert L. Killion, “Crowdsourcing Thesis Survey.”

gather and manipulate the metadata, or the “[sets] of data that describe and give information about other data”⁹⁷ surrounding a particular object, or information set, already in a database or online platform. The most common task associated with this type of project is the tagging of an object with certain searchable metadata. Tagging can be defined as a way of “organizing information that uses keywords contributed by ordinary users”⁹⁸ in order to link information for easy recall. Rather than employing public participation during the act of digitization, these projects are most successful once the information involved in the project has already been digitized by the host institution.

Maps Georeferencing Project

In 2011, the British Library launched its Map Georeferencing project, which sought to “crowdsourc[e] location data to make a selection of [their] vast collections of maps fully searchable and viewable...”⁹⁹ In order to accomplish this, the museum began to georeference their collections, or, “[a]ligning geographic data to a known coordinate system so it can be viewed, queried, and analyzed with other geographic data.”¹⁰⁰ For this project, this meant matching up the library’s historic maps by overlaying them with modern day maps to allow for “visualisation, comparison, analysis and searching.”¹⁰¹

When the British Library chose to create a crowdsourced project aimed at classifying their large and highly sought after collection of historic maps, they first had to choose a platform for the project, as well as decide which maps would be selected first. Ultimately, they chose two

⁹⁷ Google, s.v. “Metadata,” accessed April 5, 2015, <https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#safe=off&q=metadata%20definition>.

⁹⁸ Gene Smith, *Tagging: People Powered Metadata for the Social Web* (Berkeley: New Riders, 2008), 3.

⁹⁹ “About This Project,” British Library: Georeferencing, accessed April 7, 2015, <http://www.bl.uk/maps/georefabout.html>.

¹⁰⁰ GIS Dictionary, “Georeferencing,” accessed May 2, 2015, <http://support.esri.com/en/knowledgebase/GISdictionary/popup/georeferencing>.

¹⁰¹ “Detailed Instructions for Georeferencing Historic Maps Using the British Library Georeferencer,” British Library, accessed April 7, 2015, http://www.bl.uk/maps/georeferencer_instructions.pdf.

collections to launch their new georeferencing project. The first was the Ordnance Survey Drawings, which consisted of the “first mapping of England and Wales...and includ[ed] unique information such as field boundaries, land-use data and place names, dwellings, watercourses, and relief[s].”¹⁰² The second collection chosen was the Crace Collection of Maps of London, which “illustrat[ed] the urban development of the city...throughout major periods, from the rebuilding of London after the Great Fire in 1666, to the expansion of the city with...urbanization and industrialization...”¹⁰³ Both of these were chosen because they were easy to overlay onto modern day maps, and also because they had already been scanned and were available on the British Library’s Online Gallery website.

The next step was to select a platform to georeference these maps. The British Library chose program called Georeferencer 3.0, which was developed in 2011 by Klokan Technologies with the help of the Moravian Library and the Czech National Research Project.¹⁰⁴ The georeferencer was chosen for its, “accessibility and convenience of the application, activity engaging [and] simple process of contribution, immediate results and feedback, [and] recognition and visible overall contribution.”¹⁰⁵

The British Library’s georeferencer can be accessed directly from the library’s main website or from the project’s front page. If needed, the library provides a tutorial video on how to use the platform before the user enters the application.¹⁰⁶ Users of the platform are shown a digitized map on the right and modern day maps on the left. Users are asked to find recognizable features (such as cities, landmarks etc.) on the historic map, and match them to the equivalent

¹⁰² Kimberly C. Kowal and Petr Pridal, “Online Georeferencing for Libraries: The British Library Implementation of Georeferencer for Spatial Metadata Enhancement and Public Engagement,” *Journal of Map and Geography Libraries*, 8, (2012): 276-289.

¹⁰³ Ibid.

¹⁰⁴ Ibid.

¹⁰⁵ Ibid.

¹⁰⁶ “The British Library: Georeferencer Pilot,” Klokan Technologies, Vimeo, Flash Movie, <https://vimeo.com/36419466>, (Accessed April 8, 2015.)

points on OpenStreetMap, an open source equivalent to GoogleMaps,¹⁰⁷ using the map points marker. If the user is unable to find the modern day equivalent, he/she has the option to switch among several other modern day maps, including GoogleMaps, Google Satellite, Ordnance Survey OpenData, etc.¹⁰⁸ The interfaces let the user zoom in and out of each map as necessary in order to accurately place the markers.

After at least three points have been placed, the user can save the map, which will overlay the historic and modern day maps together in order to see how they align or change.¹⁰⁹ The digital platform has different tabs, so users are able to view the overlaid cartographs different panes. For example, users can click on the “accuracy tab” in order to see a gridded overlay depicting how accurate their georeferenced points are.¹¹⁰ According to Kimberly Kowel, the head of the project, “many users appreciated seeing not just the results or their work, but obtaining feedback on how correctly it had been done.”¹¹¹

The georeferencer was also created with a number of features in order to motivate and engage users. New improvements were made to the original Georeferencer 3.0 in order to better connect the application with social networks and allow users to view their participation, and the progress of the projects, as a whole, which “served to acknowledge and reward participants’

¹⁰⁷ “About”, OpenStreetMap, accessed April 2, 2015, <https://www.openstreetmap.org/about>.

¹⁰⁸ The British Library, “Detailed Instructions for Georeferencing Historic Maps Using the British Library Georeferencer.”

¹⁰⁹ Kimberly C. Kowal, “The British Library Georeferencing Website Puts Historic Maps in their Place,” *Museum Heritage*, February 20, 2013, accessed April 4, 2015, http://www.museumsandheritage.com/advisor/news/item/2794?utm_source=rss&utm_medium=rss&utm_campaign=la-british-library-developpe-linteractivite-des-cartes-historiques-the-british-library-georeferencing-website-puts-historic-maps-in-their-place.

¹¹⁰ Henry Grabar, “ Good Deed of the Day: Help Georeference the British Library’s Map Collection,” *City Lab*, January 28, 2013, accessed April 4, 2015, <http://www.citylab.com/tech/2013/01/good-deed-day-help-georeference-british-librarys-map-collection/4516/>

¹¹¹ Kowel et al., “Online Georeferencing for Libraries: The British Library Implementation of Georeferencer for Spatial Metadata Enhancement and Public Engagement.”

efforts.”¹¹² The progress of each individual was recorded and the British Library invited the top georeferencers on a behind-the-scenes tour of the Maps Collection. In addition, participants of the project are invited to join the Georeferencer’s user group in order to connect with other participants.¹¹³

The library established a threshold using an error margin of .005 in order to determine which georeferenced points were accurate enough to be saved and which ones needed to be corrected. When reviewing their first batch of data, they found that the results did not hold up to the performance of museum staff. As stated by Kimberly Kowel:

The results obtained using this online tool could not compare with professional georeferencing, which would have been more precise and have offered the possibility of removing marginalia and applying various high-order polynomial transformation methods based on knowledge of the map projection and coordinate system.¹¹⁴

Although the results would have been more exact if staff had taken over the georeferencing project, the team found that less than 5% of maps referenced by the public had an error value greater than the .005 margin deemed acceptable.¹¹⁵ In addition, when these maps needed to be corrected by staff, it turned out to be a rather intensive process, even for the small fraction of the collection used. Based on these results, the British Library concluded that this project would not have been possible had it been completed solely by museum staff and georeferencing professionals.¹¹⁶

¹¹² Ibid.

¹¹³ “Georeferencer User Group”, Google, accessed April 5, 2015, <https://groups.google.com/forum/embed/?place=forum/georeferencer&showsearch=true&showpopout=true&parturl=http%3A%2F%2Fhelp.georeferencer.org%2Fuser-group%2F#!forum/georeferencer>.

¹¹⁴ Kowel et al., “Online Georeferencing for Libraries: The British Library Implementation of Georeferencer for Spatial Metadata Enhancement and Public Engagement.”

¹¹⁵ Ibid.

¹¹⁶ Ibid.

One week from launching the project, all 725 maps had been successfully georeferenced by 90 public participants. When reviewing the data, the Library found that about half of the work had been completed by the top 5% of users. Following the overwhelming success of their first project, the Library has continued to digitize and upload its map collection. In November of 2014, the Library uploaded its largest collection yet, containing over 50,000 maps.¹¹⁷ To date, over 10,000 maps have been referenced.¹¹⁸

The success of the project has led to other maps related crowdsourced tasks. In February of 2015, the library became aware that a number of maps were digitized and uploaded on their online gallery. These maps were not accessible since they were not tagged as maps, and so, were not searchable.¹¹⁹ The library recruited volunteers to help them find and tag these images. Over 29,000 maps were found and tagged.

Crowdfunding

Crowdfunded projects rely on the monetary support of their participants. Like classification, crowdfunding does not utilize volunteers to propagate information or edit existing knowledge; instead it allows users to participate in a new platform by engaging with support through donations rather than with time. Crowdfunding host sites such as Kickstarter, IndieGoGo, and GoFundMe, are now mainstream outlets for developers to seek funding for projects. Although Ooman and Aroyo distinguish crowdfunding as a subset of crowdsourcing,¹²⁰ in recent years this subject has expanded beyond crowdsourcing and has become a topic in its

¹¹⁷ The British Library, "About This Project."

¹¹⁸ "Overall Progress of BL Georeferencer," British Library: Georeferencer Participants, accessed April 7, 2015, <http://www.bl.uk/maps/georeferencingdata.html>.

¹¹⁹ Kimberly Kowal, "Found: More Maps than we'd Reckoned," *Maps and Views Blog*, February 17, 2015, accessed April 7, 2015, <http://britishlibrary.typepad.co.uk/magnificentmaps/2015/02/found-more-maps-than-wed-reckoned.html>.

¹²⁰ Johan Oomen and Lora Aroyo, "Crowdsourcing in the Cultural Heritage Domain: Opportunities and Challenges."

own right with a wide variety of literature surrounding the subject. Due to the complexities which now surround this growing topic, only a general overview will be included in this paper.

Together We're One: Crowdfunding our Yoga Exhibit

Museums generally use crowdfunding to fund exhibitions, conservation efforts, or other specialized projects. In October of 2013, the Smithsonian Institution in Washington D.C began its first crowd-funded project, entitled "*Together We're One: Crowdfunding our Yoga Exhibit.*"¹²¹ Using the crowdfunding site Razoo, the project sought to raise \$125,000 in order to support the completion of the exhibition *Yoga: The Art of Transformation*.

The museum chose to embark on the crowd funding campaign because it had the ability to collect donations in smaller denominations, making the campaign seem more attractive to prospective donors. In addition, the campaign was geared towards the growing population of Yoga practitioners in the United States. The museum recognized that, with over 20.4 million people currently practicing yoga,¹²² many would be unable to afford to make a large donation.

As stated on the frequently asked Questions for the exhibition:

Why crowdfunding? We're trying a new (to us, at least!) and innovative fundraising approach worthy of a new and innovative exhibition. Crowdfunding is not too different from our other fundraising efforts; we're just asking more people for a smaller amount of money, rather than asking a few people or corporations for a large amount of money. Since so many people practice and are enthusiastic about yoga, we're choosing a format that allows everyone to get involved, not just those who have the means to make large donations.¹²³

¹²¹ Erin Ruberry, "Art of Yoga Smithsonian Crowdfunding Campaign Kicks off Ahead of October Exhibit," *The Huffington Post*, May 29, 2013, accessed April 8, 2015, http://www.huffingtonpost.com/2013/05/29/art-of-yoga-smithsonian-crowdfunding_n_3354115.html?

¹²² "Yoga Journal Releases 2012 Yoga In America Market Study," *Yoga Journal*, (December 6, 2012), accessed May 4, 2015, <http://www.yogajournal.com/article/press-releases/yoga-journal-releases-2012-yoga-in-america-market-study/>.

¹²³ "Frequently Asked Questions," *Yoga: The Art of Transformation*, 2014, accessed April 8, 2015, <http://www.asia.si.edu/support/yoga/faq.asp>.

Many crowdfunded projects create “perks” for their contributors, and the Smithsonian’s campaign was no different. In order to motivate people to give, the website advertised the various benefits of giving to the exhibition. Not only were names added to an “ever-growing digital plaque” displayed in the lobby of the museum, but contributors were also invited to the museum for a “special event” after the opening of the exhibition.¹²⁴

In order to advertise the *Together We’re One* project, the Smithsonian employed a number of outreach techniques. Besides promoting the campaign on social media platforms, the museum also employed a number of “Yoga Messengers” to spread the word.¹²⁵ In exchange for a “special event invitation,”¹²⁶ these messengers were given materials to create content (blogs, videos, or other promotional material) that would further advocate for the campaign and its mission.

The campaign ran one month, and managed to surpass its goal, raising more than \$174,000 to fund the exhibition. By incentivizing contributions, the museum was able to create a low cost rewards program that yielded a high return rate. Although crowdfunding has evolved into an expansive topic, it remains a legitimate way to raise money and allows the public to take ownership of the exhibition.

¹²⁴ Judith H. Dobrzynski, “At The Freer-Sackler, Crowdfunding For Yoga,” *ArtsJournal Blogs*, May 28, 2013, accessed May 4, 2015, <http://www.artsjournal.com/realcleararts/2013/05/at-the-freer-sackler-crowdfunding-for-yoga.html>.

¹²⁵ Ibid.

¹²⁶ Ibid.

Conclusion

Once upon a time there were producers and consumers. Their roles were static and well defined. But thanks to the Internet and falling cost of the silicon chip, the line between producer and consumer has begun to blur. Amateurs provide the crowdsourcing engine with fuel, and the open source software movement provided it with a blueprint. But it's the widespread availability of the means of production that empower the crowd to take part in a process long dominated by companies. As a result, the "consumer," as traditional conceived, is becoming and antiquated concept.¹²⁷

As technology becomes a more ubiquitous part of our everyday life, cultural institutions must work to integrate these advances into the way they operate. The cultural world is currently in a state of flux, where the relationship between museums as information dispensers and the public as silent consumers is shifting. Now more than ever, museums need to find ways to stay relevant in this new interactive world order. Crowdsourcing is a convenient way to meet internal museum project goals while also providing an outlet for the public to have a more active role in the institution. Driven by their personal interests and dedication to the projects they assist, these volunteers are becoming a vital force behind the scenes.

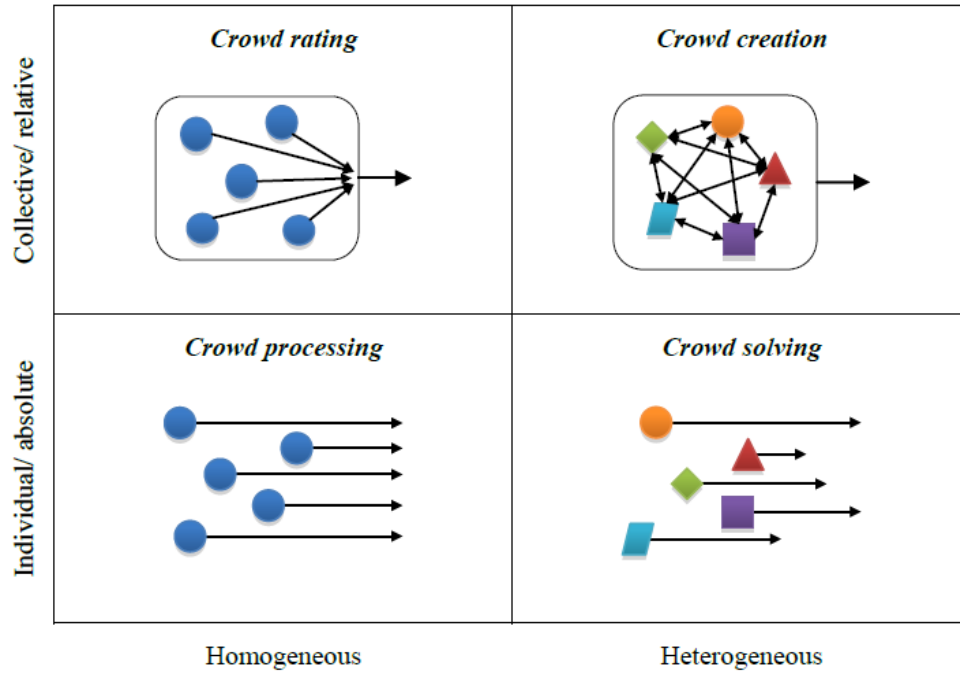
Just like the idea of crowdsourcing and a whole, the best practices and practical applications of these projects are constantly growing. Every new project has the opportunity to engage their patrons in a new and unique way, while also gaining valuable information about their audience or collection. Those seeking to implement crowdsourced projects should look to create platforms that will facilitate user enjoyment and continued motivation. Once an idea has been finalized and a specific goal set, determine the type of project type that would best meet these goals. Project creators must be sure that their ideas are manageable and their tasks simple enough to be easily comprehended. Data evaluation and reintegration should also be considered

¹²⁷ Jeff Howe, "Crowdsourcing: Why the Power of the Crowd is Driving the Future of Business," (New York: Three Rivers Press, 2008) 72.

as these decisions will affect how the project is validated and reviewed by staff members. Taking care to address these steps will yield a more successful integrative project.

However, there is still much to learn in the future regarding these standardizations. Much of the mystery and confusion around current crowdsourcing practices stems from a lack of literature and application in the museum world. As projects grow and develop, new and innovative ideas will continue to emerge. Similarly, as technology continues to integrate into cultural institutions, data standardization and database re-integration will continue to become more mainstream topics with more easily understood applications. For now, crowdsourcing remains an exciting frontier, full of possibilities for both interested volunteers and professionals alike.

Fig. 1: Four Types of Crowdsourcing¹²⁸



¹²⁸ Geiger et al, "Crowdsourcing Information Systems- A Systems Theory Perspective."

Fig. 2- The Organismic Integration Theory¹²⁹

AMOTIVATION

Amotivation	Actions performed unintentionally, or have no relevance to the task at hand	Impersonal
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EXTRINSIC MOTIVATION

External Regulation	Actions performed due to extrinsic reward or punishment	External
Introjection	Actions performed in order to gain approval from others	Somewhat External
Identification	Actions are performed when goals are identified and their value is understood	Somewhat Internal
Integration	Goals become self-identified and actions are performed to complete these goals	Internal



INTRINSIC MOTIVATION

Intrinsic Motivation	Actions performed due to enjoyment/ Interest in the activity	Internal
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¹²⁹ Danielle Pace, "Organismic Integration Chart," 2015.

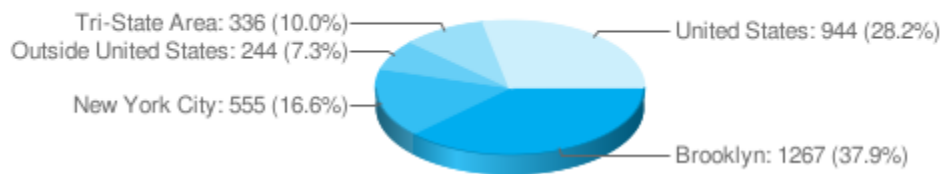
Appendix A

Results for *Click! A Crowd-Curated Exhibition by the Brooklyn Museum*¹³⁰

- 3,344 evaluators cast 410,089 evaluations.
- Each of the 389 images was seen approximately 1,054 times.
- On average, an evaluator viewed an image for 22 seconds before casting an evaluation.
- 3,098 comments were given during the evaluation period.
- On average, each evaluator looked at 135 works.
- If the evaluator had submitted a photograph, the average number of works he/she evaluated was 289.
- 575 people evaluated all 389 of the submitted works, completing the evaluation. (163 of these people were participating artists.)

Evaluation Statistics for *Click! A Crowd-Curated Exhibition by the Brooklyn Museum*¹³¹

Evaluators By Location

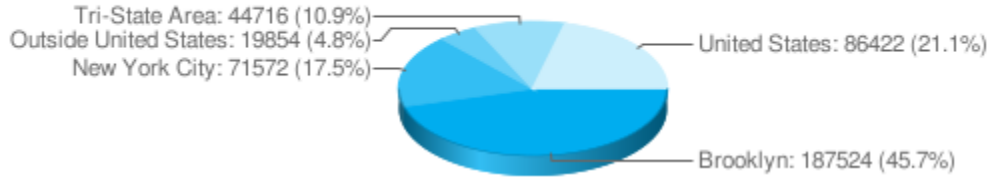


Evaluator location	Number of evaluators	Percent of all evaluators
Brooklyn	1,267	37.9%
New York City	555	16.6%
Tri-State Area	336	10.0%
United States	944	28.2%
Outside United States	244	7.3%

¹³⁰ “*Click! A Crowd-Curated Exhibition: Evaluator/ Evaluation Statistics*,” Brooklyn Museum, accessed December 30, 2014. <https://www.brooklynmuseum.org/exhibitions/click/>.

¹³¹ Ibid.

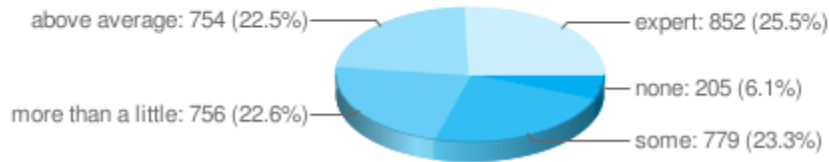
Evaluations By Location



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Evaluator location	Number of evaluations	Percent of all evaluations
Brooklyn	187,524	45.7%
New York City	71,572	17.5%
Tri-State Area	44,716	10.9%
United States	86,422	21.1%
Outside United States	19,854	4.8%

Evaluators By Knowledge Level



133

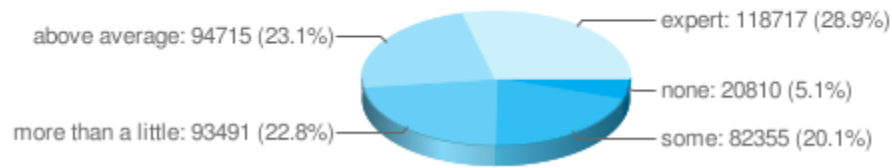
Evaluator knowledge level	Number of evaluators	Percent of all evaluators
Expert	852	25.5%
Above Average	754	22.5%
More Than a Little	756	22.6%
Some	779	23.3%
None	205	6.1%

¹³² Ibid.

¹³³ Ibid.

Appendix A

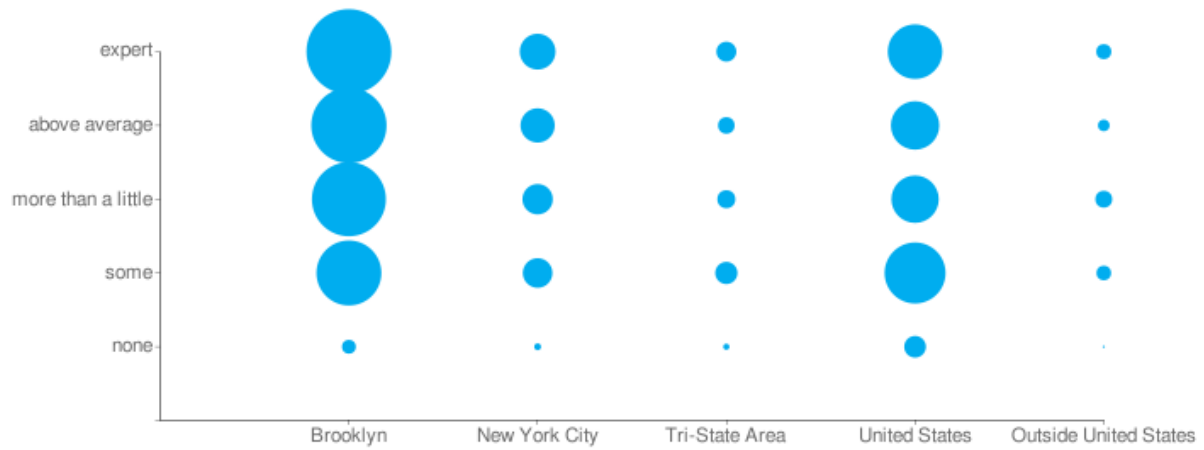
Evaluations By Knowledge Level



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Evaluator knowledge level	Number of evaluations	Percent of all evaluations
Expert	118,717	28.9%
Above Average	94,715	23.1%
More Than a Little	93,491	22.8%
Some	82,355	20.1%
None	20,810	5.1%

Knowledge/Location Distribution Among Evaluators



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¹³⁴ Ibid.

¹³⁵ Ibid.

Appendix A

Knowledge/Location Distribution Among Evaluations



	Brooklyn	New York City	Tri-State Area	United States	Outside United States
Expert	58,149 (31.0%)	21,924 (30.6%)	11,825 (26.4%)	22,234 (25.7%)	4,585 (23.1%)
Above Average	46,469 (24.8%)	18,975 (26.5%)	8,590 (19.2%)	16,900 (19.6%)	3,781 (19.0%)
More Than a Little	45,278 (24.1%)	13,954 (19.5%)	10,237 (22.9%)	16,318 (18.9%)	7,704 (38.8%)
Some	31,150 (16.6%)	13,926 (19.5%)	11,640 (26.0%)	21,951 (25.4%)	3,688 (18.6%)
None	6,478 (3.5%)	2,793 (3.9%)	2,424 (5.4%)	9,019 (10.4%)	96 (0.5%)

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¹³⁶ Ibid.

¹³⁷ Ibid.

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