View metadata, citation and similar papers at core.ac.uk
brought to you by CORE
provided by Illinois Digital Environment for Access to Learning and Scholarship Repository

Does Twitter Help Museums Engage with Visitors?

Lesley A. Langa[1]
[1] College of Information Studies, University of Maryland

Abstract
Even though Twitter is a fairly new web 2.0 tool, U.S. museum leaders are extoling the platform as a necessary component to any online programming or presence in museums today. Because of the myriad ways museums can use the platform to perform educational, marketing, or engagement-focused programming research on U.S. museums and Twitter is generally very broad, and because of the newness of the platform research in the museum informatics literature is exploratory. The present study seeks to understand more about the relationship building that museums are engaging in using Twitter. Thus, this study explores the ways in which museums engage with online users in their Twitter feeds through coding the content and frequency of a sample of U.S. museums on Twitter. Through this evaluation the present study seeks to understand how engagement is being practiced from the kinds of dialogue museums are conducting with online users.
Keywords: museum, social media, engagement, participatory culture
Citation: Langa, L. A. (2014). Does Twitter Help Museums Engage with Visitors? In *iConference 2014 Proceedings* (p. 484–495). doi:10.9776/14130
Copyright: Copyright is held by the author.
Acknowledgements: The author would like to acknowledge the dutiful iConference reviewers, Dr. John Carlo Bertot, Dr. Katie Shilton, Dr. Kari Kraus, and Dr. Paul T. Jaeger for their insights and recommendations on this paper.
Contact: lesleylanga@gmail.com

1 Introduction

Even though Twitter is a fairly new web 2.0 tool, U.S. museum leaders are extoling the platform as a necessary component to any online programming or presence in museums today (Allen-Greil and MacArthur, 2010; Bearman and Geber, 2008; Fletcher and Lee, 2012; Hill, 2010; Lopez, et al, 2010; Osterman, et al, 2012; Simon, 2008). In fact, evidence of museums adopting Twitter is reflected in recent literature on the range of uses and strategies, from encouraging museums to adopt to create an online "community" or to marketing and outreach (Allen-Greil and MacArthur, 2010; Anderson, 2009; Hill, 2010; Lopez, et al, 2010; Waterton, 2010). This indicates that museums are employing Twitter for various reasons (Fletcher and Lee, 2012; Osterman, et al, 2012). It is easy to see why museums are adopting the social media platform with increasing numbers of Americans using Twitter to connect with personal friends or businesses, and the service is free to use for both museums and museums visitors (Rainie, Smith, and Duggan, 2013).

Because of the myriad ways museums can use the platform to perform educational, marketing, or engagement-focused programming research on U.S. museums and Twitter is generally very broad, and because of the newness of the platform research in the museum informatics literature is exploratory (Fletcher and Lee, 2012; Hill, 2010; Osterman, et al, 2012). The present study seeks to understand more about the relationship building that museums are engaging in using Twitter. To date, no research has focused specifically on the participatory model of Twitter, wherein users of the platform can engage in a direct, one-to-one dynamic. In fact, Twitter advocates in the museum community recognize that, "this opportunity for dialogue with your no-longer-silent audience represents a fundamental shift in the way arts organisations will have to work in the future, and a large portion of what [museums] tweet will be responses to questions, comments and so on" potentially increasing and deepening the relationship museums have with their visitors (Hill, 2010).

However, how often museums are creating the opportunity for two-way engagement is still not well understood in the research or in museum practitioner literature. Thus, this study explores the ways in which museums engage with online users in their Twitter feeds through coding the content and frequency of a sample of U.S. museums on Twitter. Through this evaluation the present study seeks to understand how engagement is being practiced from the kinds of dialogue museums are conducting with online users. Previous studies of the use of Twitter and literature on the adoption of social media by museums, a discussion on the term engagement, and how it is different from participation, the methods used to collect and analyze Twitter feeds, and a discussion of what further we can interpret from Twitter content will be discussed in the following sections.

2 Literature

2.1 Twitter in Museums

Lopez, et al, present the first findings on the presence of Web 2.0 tools on museum websites from various countries finding that notably two-way types of engagement were less frequent than individualized or passive visitation experiences (2010). In 2008, when the study collected data, content sharing sites such as Flickr, Facebook, MySpace, Reddit, Delicious, LinkedIn, YouTube and Twitter were active, however, the study noted the most common tools used by museums were blogs and RSS feeds (Lopez, et al, 2010). 2.0 tools, of all the online activity from the institutions in their sample, represented under ten percent: sharing sites (5%), commenting tools (2%), uploading to the museum website (2%), open forums (1%) or moderated forums (2%), mashup tools (0.08%), and collective construction (0.04%) (Lopez, et al, 2010).

With increased attention paid to social media engagement since 2008, a variety of businesses are channeling a fair amount of attention to the Twitter space, including museums. This is customary for museums, which have generally adopted and incorporated new technologies into their business management including technologies like mobile/handheld devices for tours, personal computers for content management systems and backend operations, and web-based technologies for in-gallery interactive screens (Angus, 2012). Practitioners, like Nina Simon, simultaneously were early adopters of incorporating participatory design principles into educational programming and exhibit design to create new spaces for a museum "community" of visitors to interact with museums (2010). Combined, these efforts were a natural progression toward including Twitter into museum practice allowing for participatory, or co-created, museum experiences (Ciolfi, Bannon, and Fernström, 2008; Govier, 2010; Russo, 2011; Simon, 2010). Other early adopters and innovative museums christened "new media" departments dedicated to valuing the new online "community", and investing in participatory events or programming (Allen-Greil and MacArthur, 2010). The rational for this new business model is that museum visitors are moving into a more information-available world, and digital means of communicating, so museums likewise should reflect the current prevailing behaviors of visitors and cater to them (Lovejoy, Waters, and Saxton, 2012; Peacock and Brownbill, 2007).

To date, understanding Twitter in museum practice has described use and expectations of use. In talking to museum practitioners, Fletcher and Lee found that staff is using Twitter most often for event listings or reminder notices (60%), followed by posting online promotions or announcements (42%) (2012). Only 11% of their survey respondents indicated that they use social media for dialogic/conversational engagement, however, when asked about other uses of Twitter, museum practitioners indicated some two-way types of behavior, including games or quizzes and engagement with other institutions (Fletcher and Lee, 2012). In interviews with museum information professionals from a variety of departments (like communications or curators), museum staff admitted that few museums are using social media for public engagement at all and ranked engagement as sixth out of ten options (Fletcher and Lee, 2012). Similar findings show that in time series data collected over six months at two Smithsonian museums Twitter

content had a limited range mostly clustering around marketing types of communication: exhibition, upcoming activities and announcements; museum staff commentary or criticism; use new/social media; thanks; and sharing links and resources. Although direct inquiry, direct reply, historical information, public comments, solicitation for public participation, and ongoing conversation were present, they were less common (Osterman, et al 2012). From this cataloging of Twitter activity, we see that museums focus Twitter content towards pushing out information. Additionally, museum online visitors have stated that Twitter in museums has no specific nature (MuseumNext, 2011). MuseumNext found that users may be interested in following institutions, although the range of activities users expect from a museum is pretty broad from promotion for events to dialogue with visitors (2011). Museums seem to envision Twitter as an opportunity to evolve their practice and role in society to reflect current technological trends and openness, but there is no indication from studies on their use of these tools that Twitter has changed their traditional means of communication (Falk and Sheppard, 2006; Fletcher and Lee, 2012; Hill, 2010).

2.2 Museum authority and voice

Traditional communication models for museums rely on passive absorption of concepts or context being offered by a voice of experts (Coldicutt and Streten, 2005; Walsh, 1997). This has lead museums to align their educational approach to formal education models through providing curated experiences (Kefi and Pallud, 2011; Wetterlund, 2012). Twitter, and engagement, does not have a locus of authority, and there are no bounds on who can include context or interpretation to museum collection and exhibits. Some practitioners laud this change arguing that social media allows museums to have a "many-to-many" relationship with visitors where any historical or factual context can be sourced by anyone with access to a search engine (Coldicutt and Streten, 2005; Wetterlund, 2012). One example of a many-to-many relationship has developed in science museums. Users are key allies in continued research for identifying astrophysical material or long-term bird watching. The relationship that the Adler Planetarium developed with its online community relied on large datasets being crowdsourced by amateur scientists, while the verification of data remained in the hands of scientists based at the museum (Reed, Rodriguez, and Rickhoff, 2012; Smith, 2012). In an interesting way, the authority over interpretation has remained in the voice of the museum, while encouraging interested public observers to act as a more efficient data collection mechanism. This model, some have argued, is the future of online cultural content, one that incorporates both visitor and museum knowledge in concert with each other (Graham, 2012; Wetterlund, 2012). However, not all museums have adopted new means of communication with their visitors. Art museums, by contrast, expressed concern over relaxed relationships with visitors because they view interpretive and authoritative expertise as their role in relationships with visitors (Wetterlund, 2012). Social media, it was argued, challenges curatorial authority especially (Trant, 2006; Wetterlund, 2012).

Additionally, Twitter is a conversational medium that is completely different from the traditional communication models to which art museums are accustomed. The public nature of the platform, the tone and content of museum Twitter feeds serve as a complex mix of corporate, institutional voices with personal, individual connections. Interestingly, also, museums are institutions made up of several staff, which may or may not color the dynamic of the relationship that museums can have with their Twitter followers. The burden for maintaining the institutional voice may fall to one staff member responsible for tweeting, and the decision of which person in what department is very telling for how museums want to continue to be perceived. Marketing department staff will approach the issue of voice very differently than education staff, website staff, or curators.

2.3 Participation vs. engagement

Most museums start using Twitter to enhance a museum's ability to reach new audiences and to connect with visitors in a more meaningful way (Angus, 2012; Cameron, 2003; Fletcher and Lee, 2012; Osterman, et al, 2012). Counting website hits and followers on Twitter may be able to satisfy this initial interest in

using Twitter, but counts cannot simply be used as a proxy measurement for success with any online activity (Allen-Greil, 2012; Chan, 2008). There is a faction of museum practitioners and researchers who are looking beyond Twitter use to "visitor engagement" online (Fantoni, Stein, and Bowman, 2012; Richardson and Visser, 2012). However, this faction has not come to an agreement about when and where programming is deemed "engaging" or how to measure engagement in activities where the museum and visitors are both contributing.

In fact, it is becoming increasingly difficult to parse participation and engagement in online activity, especially on Twitter. It's common in the museum literature for these two terms to be used interchangeably to describe some activity or program wherein visitors were active and made a contribution, however small or large that may be. Therefore, any participation is counted, and simultaneously counted as engagement. Logically, this basic understanding of engagement and participation and the presence of both together does not help museums understand how they are having an impact on the quality of the experience they provide visitors. In fact, in Nina Simon's book, *The Participatory Museum*, she outlines measures for escalating the visitor's ability to participate in the museum-to-museum visitor relationship from very little to taking over the museum, but not the impact or engagement of a participatory experience (2010).

Additionally, the studies on Twitter use in museums have demonstrated engagement is difficult for museums to perform, and also difficult to measure. Fletcher and Lee note that even in considerations of time (i.e., how long museum staff spend on social media) meaningful engagement is still not a direct result of how much time museum staff spends on social media (2012). Similarly, Osterman, et al, found that with time series data (over six months) of Twitter content from two museums that types of participation, such as solicitations to the public and ongoing conversations, were not primary content (2012). Recently, new capacity building literature emphasizes that in order to promote engagement and to understand this behavior from users, museums must also define what kinds of participation they are interested in encouraging in their visitors (Richardson and Visser, 2012). While this next step is encouraging, it also lacks a clear definition of engaging activities, or how to measure success. From these resources, it is clear that capturing data on engagement requires different measurements that provide a common interpretation of what behavior from museums and what behavior from online visitors is engaging.

Increased knowledge and testing for measuring engagement can begin laying benchmarks for activities, programs, and implementation strategies for social media use that would differentiate participation from engagement. To date, studies focused on Twitter use cannot tell us a lot about how museums are interacting with their online visitors, simply that museums are pushing information to visitors online. Although museum professionals surveyed have not indicated that conversational, two-way engagement is a primary focus, the types of dialogue that they are engaging in has not been well explained. In the following sections, the present study will attempt to answer that question and describe the frequency with which engagement is happening testing an engagement coding rubric.

3 Methods

In order to know how a museum is employing a level of engagement, a natural place to investigate would be the social media policy or guidelines that dictate how staff or the public engage in the platform and what content is deemed inappropriate. Unfortunately, not many museums have such policies available. Therefore the present study seeks to answer two broad questions about social media use:

1) What are the types of tweets museums are posting in Twitter?
2) How, and through what activities, are museums engaging their visitors via Twitter?

Using a multi-method approach, the present study employed quantitative counting and categorization of content tweeted by a purposeful sample of 50 museums (R1). Twitter was selected because it is a source of textual content and because many museums are using the platform. Outwit Hub Pro software was employed

to scrape Twitter postings from each museum in the sample, along with time stamp, user ID, and tweet ID. Twenty postings were collected from a museum's publicly available feed on October 13, 2012 showing activity from the date of collection backwards over time. After data collection, 48 cases were kept for analysis. The sample was constructed to collect data from across museum type and size, though 18 museums in the sample represent art and history institutions and 18 represent science institutions. Twelve museums in the sample are non-disciplinary types including children's museums or halls of fame.

Dimension	Level of Engagement	Score	Weight
Count	-Number of follower or friends		
	-Number following or friends		
Reliability	-Clearly states the official status of the social media page	0/1	1
	-Uses recognized museum logo as profile picture	0/1	1
Content	-Not only recycled content from other social media network	0/1	1
	-Uses platform specific tools (e.g. #hashtags, @replies, retweets, favorites, tags, playlists, events, etc.)	0/1	2
	-Multiple social media channels with links across platforms	0/1	3
	-Has "live content/interactive" sessions (e.g., Twitter townhall)	0/1	3
Findability	-Access to social media clearly indicated on main homepage	0/1	1
	-Social media searchable through internal search engine	0/1	1
Frequency	Once a month<frequency<once a week	0/1	1
	Once a week<frequency<every day	0/1	2
	New content posted every day	0/1	3
	Several times a day	0/1	3
Engagement	Once a month<Active user engagement<once a week	0/1	1
	Once a week<Active user engagement<every day	0/1	2
	Actively engages (and responds) to users every day	0/1	3
	Not at all	0/1	0

Table 1: Coding dimensions

A categorization protocol was adapted from a Stratford Institute for Digital Media report to capture types of activity that a museum engages in through the Twitter platform (Stratford, 2012). Table 1 above shows the evaluation dimensions and scoring rubric.

The Stratford Institute rubric provided two legitimate bases for this study:

1) The rubric could be validated for its applicability on engagement activity in Twitter, and
2) Allow the present study to focus specifically on the coding of engagement activity.

Dimensions were coded using the rubric above to count the number of followers, reliability of activity, content, findability of Twitter account, and frequency of posts. Each tweet coded in the study was evaluated against the dimension criteria and scored using a dichotomous system; zero indicated that the description of the activity was not satisfied, and one indicated the activity was satisfied. After coding the data for the frequency dimension, the coding rubric was augmented to add a temporal dimension for "several times a day" to credit museums in the sample for high activity. Levels within each dimension were weighted and scored depending on the level of engagement present in each activity. The author coded all dimensions, except engagement independently. Two coders coded the engagement dimension independently, and results were compared for intercoder reliability.

Because of the difficulty in measurement, the base exchange of a museum to a visitor will be taken as participation in the present study, whereas continued one-to-one conversation in Twitter will be counted

as engagement. This allows for graded levels of how engaged a museum can be with their online community in the social media space as it represents a relationship of interested parties in the museum, and a museum interested in responding in-kind to the visitor (as if to have an almost personal kind of relationship).

In lieu of social media policies, content from Twitter postings was analyzed as a proxy for a de facto social media policy or communications strategy employed by museums in the study. All Twitter content from museums in the sample was further analyzed using the engagement dimension listed above in Table 1. Engagement represents the intersection of content with frequency, and describes how often the activity within the Twitter platform between a museum and its users is dynamic enough to show an engaging (e.g., participatory) relationship (R2). In the engagement dimension, some content may be more engaging, original, or museum-specific, therefore different weight is assigned to the level of the interaction observed in the tweets. Once the engagement dimension was coded, the rubric was augmented to account for museums in the sample that did not engage in any activity that showed a level of interaction with users. Additional analysis compared results between art and history museums with the science museums to see if art and history museums are more restrictive in their engagement of community participation. This assumption was based on the abovementioned opposition art museums had to social media and participatory experiences.

3.1 Limitations

Four primary limitations impact the findings in this study: the small sample size, the cross-sectional data collection method, the coding rubric, and lack of additional data. The small sample of museums in the study allows for in-depth analysis of the Twitter activity of each case of the sample. A larger, representative sample would have yielded generalizeable findings, however, the small number also tests the rubric and its applicability in this study after adapting it from the original application and narrowing this study to the Twitter platform. Ideally, Twitter activity would have been collected in a time series to compare findings of engagement from a single museum. It is possible that the date and time when data collection occurred did not yield engagement findings, however, a museum in the sample could generate engaging activity. Without being able to compare more than 20 tweets from each museum in the sample, it would be difficult to characterize the Twitter feed of a museum generally. The rubric, however, does provide a clear method of how to capture engagement as a combination of content and time to mitigate the lack of evidence from cross-sectional data. The issue with the rubric is that it also captures a wide range of activity in the engagement dimension, which provides a complex picture of engagement across the sample. Lastly, this study does not capture the lifecycle of a tweet to contextualize how museum tweets generate activity amongst its followers. People that are connected to the museum can engage with each other using the museum tweet as a catalyst for conversation and dialogue without actually engaging with the museum directly. Retweets, in this instance, would provide this context for engagement that may change the perspective on how the information that is tweeted by museums is possibly more successful in engaging users.

4 Findings and Discussion

While not widely generalizable, the findings from this study highlight potential areas for more detailed investigation with a broader sample from the museum sector. Initial tabulations showed that more than half of the sample had a higher number of followers than the institution followed, noted the official status of the museum in the Twitter profile, and used the official logo for the Twitter handle. Almost all sampled museums made the Twitter feed (and other social media) findable from the museum homepage, and all institutional Twitter feeds were findable through search engines. Tables 2, 3 and 4 below show a detailed summary of the findings from the study from the more complex dimensions.

In the content dimension, the highest portion of museums (97.9%) was cross-referencing social media platforms in their Twitter postings. Generally, the cross-referencing linked out to Instagram photos,

Facebook posts, or the museum website to reference ongoing or upcoming activities. Using the reply function, hashtags, shortened URLs, were the next most common content on the museum Twitter feeds. This is not surprising given that these two content activities often combine, for example, to direct Twitter traffic using a website announcement for a family program at the museum by including the shortened link in a tweet. Recycled content, such as tweets from other users, was still common amongst the sample, however, the presence of recycled content could also suggest that museums are building online communities where they may want to repost the tweets of other Twitter users because it is of interest to their followers. Only one museum in the sample was livetweeting an event through successive posts.

Overall, it appears that a large number of museums in the sample focused on original content in their Twitter feed. This suggests that Twitter use is becoming a core business function with dedicated staff time for uploading and attending to postings. This comports with Fletcher and Lee's findings that indicate almost all US museums are using some social media platforms, and at least one staff person is dedicated to maintaining social media for their museum (2012). In fact, each of the museums in the sample was also found to be active in Facebook.

Content Dimension Aspects	Overall	Art/History	Science	Other
Recycled Content	29.2%	38.9%	11.1%	41.7%
Platform tools	89.6%	88.9%	88.9%	91.7%
Multiple social media channels	97.9%	94.4%	100.0%	100.0%
Live content	2.1%	5.6%	0.0%	0.0%

Table 2: Content dimension by disciplinary type

The majority of the sample was tweeting several times over the course of a day. The frequency dimension did not originally count high activity, though after the coding was completed, the number of museums tweeting very often was deemed an important marker of the investment museums are making in their social media strategy. There are remarkable differences in frequency across disciplinary type of museum. Art and history institutions were very active on Twitter – none falling behind one tweet per week. Other types of museums in the sample, such as children's museums, halls of fame, and historic villages had less overall activity with 16.7 percent posting as slow as once per month. Interestingly, science museums fell in between art institutions and other institutions with a high rate of activity (72.2%) posting several times per day, though the posters tweeting every day is a smaller portion of science institutions. In comparison, art and history museums showed activity the highest rates for everyday posting, and then a slightly smaller percentage of those museums are tweeting over the course of a day.

Frequency Dimension Aspects	Overall	Art/History	Science	Other
Once/month	6.3%	0.0%	5.6%	16.7%
Once/week	18.8%	11.1%	27.8%	8.3%
Every day	77.1%	88.9%	66.7%	75.0%
Several times a day	75.0%	83.3%	72.2%	75.0%

Table 3: Frequency dimension by disciplinary type

It is important to highlight that when coding the engagement dimension two types of activities were observed. Two examples of the types of activity captured when coding for engagement included 1) Participation such as museum replies to users who had already posted to the museum account stating something like "Just had a great time at X museum", and the museum simply replies by thanking that user, and 2) Engagement for dialogic activity between a museum and a user wherein multiple exchanges are evidence of a dialogue. Considering this, there will be some content in the engagement dimension that

is somewhat meaningless considering the tweeting conversation might be limited to two tweets, especially if the user prompts the exchange. However, for some museums this may be the extent to which they are able or interested in interacting with visitors on Twitter.

For art and science museums no engaging activity is the highest percentage of all activity. While this may appear to show that museums are not active on Twitter, it simply means that no engaging dialogue was present in the data. Many of the institutions that are tweeting about event programming are the sole voice heard in the Twitter feed, however, there is evidence that some users are tweeting to museums who are not responding. There is also some difference between disciplinary types of museums in terms of time where science museums are engaging with visitors at a less frequent rate of once per week. In contrast to the finding above that other museums are tweeting less frequently, it appears that they are engaging to a greater degree at a rate of once per month. This describes an interesting thread in the data on other types of museums where infrequent tweeting, and overall less engagement online from these institutions could be related to their overall approach to Twitter where less frequent posts result in deeper engagement overall.

For children's museums in the other category, in particular, Twitter may not be the primary platform for interactions, and engagement. Although 93 percent of teens report to have at least one Facebook account only 12 percent of teens are on Twitter (Lenhart, et al, 2011). It may also be that engagement with children online is focused in more visual platforms like YouTube or Vine.

Engagement Dimension Aspects	Overall	Art/History	Science	Other
Once/month	12.5%	5.6%	5.6%	33.3%
Once/week	22.9%	11.1%	38.9%	16.7%
Every day	27.1%	38.9%	16.7%	25.0%
Not at all	37.5%	44.4%	38.9%	25.0%

Table 4: Engagement dimension by disciplinary type

4.1 Users of social media

Recent findings from the Pew Internet and American Life Project situate some of the activity and results from the sample. As of August 2012, 67 percent of adult users 18 and older use social networking sites, however, only 16 percent of those adults are using Twitter (Duggan and Brenner, 2013). The expectation may be that Twitter is a newer platform than Facebook, however, there is a qualitative difference between the kinds of engagement that are possible through each site. While Facebook may be more popular with adults (Pew notes 66 percent of adults using it – more than any other social networking platform), it is also a generally a one-to-many platform where institutions produce all of the content that is consumed through a Facebook page, and commenters can engage with the content posted through contributing insights, ideas, or likes in the comments section below each post (Duggan and Brenner, 2013). Facebook data for each museum in the sample was collected over the same time period revealing that no other user was posting to the Facebook page of a museum, though they were able to comment. This type of limitation of the platform does not directly connect the visitors with the museum, and focuses all activity by the visitors at other commenters. Twitter, by contrast, directly connects online visitors with museums through a one-to-one type of exchange. The type of engagement that exists in each platform is markedly different because of the ability for direct exchange with museums.

4.2 Does Twitter help museums engage with visitors?

The results of the survey indicate that Twitter does not help museums to engage with visitors. It appears that museums in the sample have taken to the Twitter platform as a means to enhance their marketing practices, however, a picture emerges from the study that engaging behavior, and opportunities for online visitors to participate, are less frequent and less common than is possible in the Twitter platform. When

compared to the findings from MuseumNext's survey in 2011, and Fletcher and Lee's study from 2010, museums and Twitter followers of museums seem to expect this activity. The echo that resounds from this space is hard to understand given that Twitter intentionally places a premium on direct connection between users. Whether or not the primacy of marketing on Twitter, and its expectation, is intentional, the fact that museums and their Twitter followers are conceptualizing the platform as a space primarily for marketing ensures that control over conversations online remains in the hands of the museum.

This is evidenced in different categories of activity that emerged as more or less engaging from the study findings (Figure 1). To a large degree the activity observed by museums in the sample was focused on one-to-many traditional communication. Those activities require and elicit fewer (or lesser) participatory behavior from a museum's Twitter followers. Even posting "fact of the day" information to Twitter, an arguably less marketing-driven and more educationally driven activity does not prompt responses from visitors. By contrast, some museums in the study were inviting participation by taking a concept like "fact of the day" and turning it in a game where a picture of a collections item would be accompanied by asking Twitter followers to make a guess about the photo's content. Livetweeting an event also invited online visitors to join a conversation about a program happening at the museum.

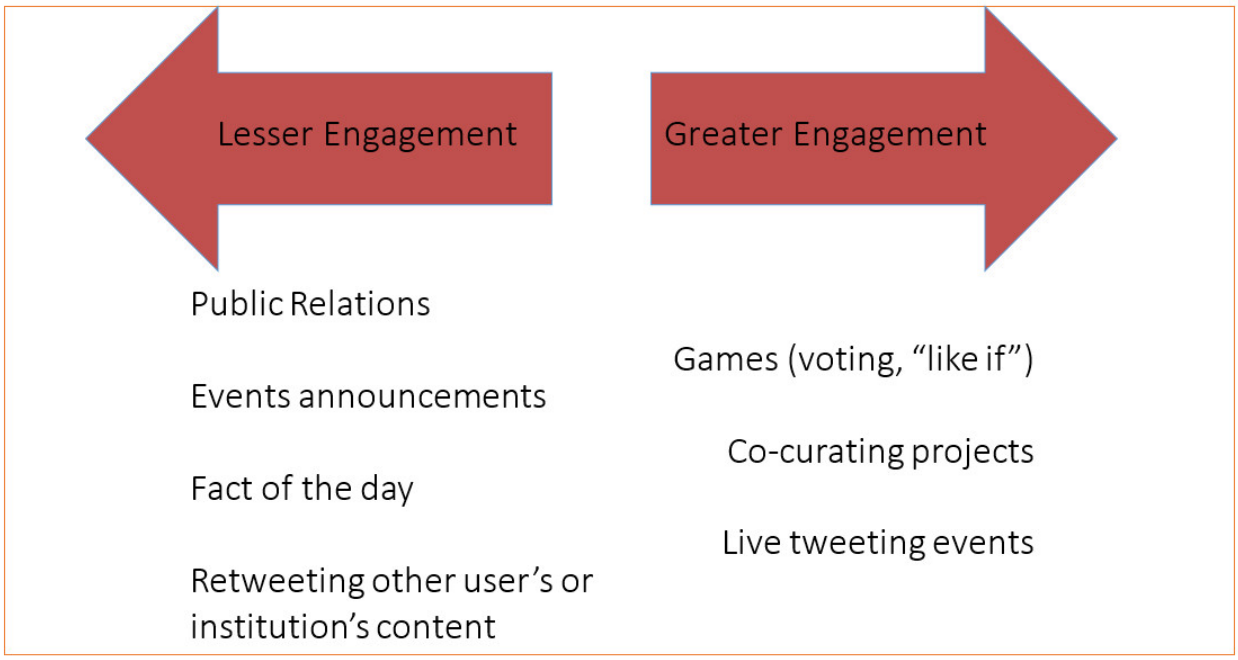

Figure 1: Museum activities in Twitter that are engaging

Fletcher and Lee noted that content was one way museum information professionals conceptualize generating more participatory or engaging behavior in social media indicating that the more "social activity" that can surround the social media content (e.g., the number of mentions of a museum on sites not related to the museum) would lead to greater success with engagement (2012, p. 13). While this approach would surely encourage museum online visitors to talk independently about the museum amongst each other, and thereby creating a many-to-many conversation, the most important way for a museum to remain in the conversation and promote the many-to-many engagement that is possible via Twitter is to define a community of online users and set goals for how they expect others to engage with each other (Hill, 2010; Richardson and Visser, 2012).

5 Conclusion and future research

In collecting Twitter posts from 48 museums across the US, the present study evaluated how the platform is used by museums and to what degree the content on Twitter represents online engaging activity. The majority of museums in the sample (97.9%) are posting with cross-platform content signaling that they use several social media channels and are connecting their online activity for users who may only reach the museum through one platform. Remarkably, recycled content (a low engagement activity) is low amongst museums in the sample (29.2%); however, livetweeting or Twitter townhall (a high engagement activity) represented the lowest across all content activity (2.1%). More than three-quarters of museums in the sample tweeted every day with three-quarters tweeting several times a day. Frequency amongst types of museums had the most fluctuation. Other museums had the fewest postings at 16.7 percent tweeting once per month. Interestingly, tweeting less frequently did not necessarily yield less engaging activity. For some museums, tweeting infrequently may also result from focusing on other social media outlets where their audience base is more active.

Findings from this study demonstrate museum and online museum user behavior at one time. Additional data collection is needed to confirm the behaviors and activity present in Twitter to produce a more holistic picture of when engagement may occur, even if that activity is episodic or infrequent. While other studies have confirmed that engagement overall tends to be low across the US museum sector, these characterizations also represent different interpretations of how to measure and define engagement.

Future research will require understanding users that are participating with museums online beyond demographics to focus on the types of activity that online museum visitors respond to and enjoy. A social network analysis of a museum's online community will describe how users are connected to the museum, to each other, and lead museums to form a sense of online community with whom they wish to engage. Museums could then expect to define how they want to engage with that community by first defining their role in it, and the behaviors they ultimately want to encourage within an online community of supporters.

6 References

Allen-Greil, D. (2012). "Measuring, Analyzing, and Reporting," in *Conversations with Visitors: Social media in museums, selected essays*. Edinburgh, UK: MuseumsEtc Ltd.

Allen-Greil, D. and MacArthur, M. (2010). "Small Towns and Big Cities: How Museums Foster Community On-line," in *Museums and the Web 2010: Proceedings*, edited by J. Trant and D. Bearman. Toronto: Archives & Museum Informatics. http://www.archimuse.com/mw2010/papers/allen-greil/allen-greil.html.

Anderson, J. (2009, Apr 8). Social media policies & museums [Web log post]. Retrieved from http://www.imamuseum.org/blog/2009/04/08/social-media-policies-museums/

Angus, J. (2012). Innovations in practice: An examination of technological impacts in the field. *Journal of Museum Education* 37(2), 37-46.

Bearman, D. and Geber, K. (2008). Transforming cultural heritage institutions through new media. *Museum Management and Curatorship* 23(4), 385-399.

Cameron, F. (2003). Digital Futures I: Museum Collections, digital technologies, and the cultural construction of knowledge. *Curator: The Museum Journal* 46(3), 325-340.

Chan, S. (2008). "Towards New Metrics Of Success For On-line Museum Projects," in J. Trant and D. Bearman (eds.). *Museums and the Web 2008: Proceedings*, Toronto: Archives & Museum Informatics. http://www.archimuse.com/mw2008/papers/chan-metrics/chan-metrics.html

Ciolfi, L., Bannon, L.J., Fernström, M. (2008). Including visitor contributions in cultural heritage installations: designing for participation. *Museum Management and Curatorship* 23(4), 353-365.

Coldicutt, R. and Streten, K. (2005). "Democratize And Distribute: Achieving A Many-To-Many Content Model," in *Museums and the Web 2005: Proceedings*, edited by J. Trant and D. Bearman.

Toronto: Archives & Museum Informatics. http://www.archimuse.com/mw2005/papers/coldicutt/coldicutt.html.

Duggan, M. and J. Brenner. (2013). *The Demographics of Social Media Users – 2012*. Prepared for the Internet and American Life Project, Pew Research Center. Washington, D.C.: Pew Research Center, February 2013.

Falk, J. H. and Sheppard, B. K. (2006). *Thriving in the Knowledge Age: New Business Models for Museums and Other Cultural Institutions*. Lanham, MD: Altamira Press.

Fantoni, S.F., Stein, R., and Bowman, G. (2012). "Exploring the relationship between visitor motivation and engagement in online museum audiences," in *Museums and the Web 2012: Proceedings*, edited by N. Proctor and R. Cherry. Silver Spring: Museums and the Web, LLC. http://www.museumsandtheweb.com/mw2012/papers/exploring_the_relationship_between_visitor_mot

Fletcher, A., and Lee, M.J. (2012). Current social media uses and evaluations in American museums. *Museum Management and Curatorship*, DOI:10.1080/09647775.2012.738136.

Graham, H. (2012). *Whose story is it anyway?: 'Public' and 'Ownership'*. Retrieved from http://www.slideshare.net/HelenGraham

Govier, L. (2010). *Leaders in co-creation? Why and how museums could develop their co-creative practice with the public, building on ideas from the performing arts and other non-museum organisations*. Leicester, UK: University of Leicester, Center for Research on Galleries & Museums

Hill, L. (2010). "What to tweet about," in *Twitter for Museums: Strategies and tactics for success: A collection of essays*, pp. 90-106, Edinburgh, UK: MuseumsEtc.

Kefi, H. and Pallud, J. (2011). The role of technologies in cultural mediation in museums: an Actor-Network Theory view applied in France. *Museum Management and Curatorship* 26(3), 273-289.

Lenhart, A. Madden, M., Smith, A., Purcell, K., Zickuhr, K., Rainie, L. (2011). *Teens, kindness and cruelty on social network sites*. Prepared for the Internet and American Life Project, Pew Research Center. Washington, D.C.: Pew Research Center, November 2011.

Lopez, X., Margapoti, I., Maragliano, R. and Bove, G. (2010). The presence of Web 2.0 tools on museum websites: a comparative study between England, France, Spain, Italy and the USA. *Museum Management and Curatorship* 25(2), 235-249.

Lovejoy, K., Waters, R.D., and Saxton, G.D. (2012). Engaging stakeholders through Twitter: How nonprofit organizations are getting more out of 140 characters or less. *Public Relations Review* 38, 313-318.

MuseumNext. (2011). Research – Museums on Twitter. Blog post http://www.museumnext.org/2010/blog/research-museums-on-twitter

Osterman, M., Thirunarayanan, M.O., Ferris, E.C., Pabon, L.C., Paul, N. (2012). "Museums and Twitter: An exploratory qualitative study of how museums use Twitter for audience development and engagement," *Journal of Educational Multimedia and Hypermedia* 21(3), 241-55.

Peacock, D., and Brownbill, J. (2007). "Audiences, Visitors, Users: Reconceptualising Users Of Museum On-line Content and Services," in *Museums and the Web 2007: Proceedings*, edited by J. Trant and D. Bearman. Toronto: Archives & Museum Informatics. http://www.archimuse.com/mw2007/papers/peacock/peacock.html

Rainie, L., Smith, A. and Duggan, M. (2013). *Coming and going on Facebook*. Prepared for the Internet and American Life Project, Pew Research Center. Washington, D.C.: Pew Research Center, February 2013.

Reed, J., Rodriguez, W., and Rickhoff, A. (2012, February). A framework for defining and describing key design features of virtual citizen science projects. Poster session presented at the meeting of *iConference 2012*, Toronto, Canada.

Richardson, J. and J. Visser (2012). *Digital Engagement Framework.* http://digitalengagementframework.com/

Russo, A. (2011). Transformations in cultural communication: Social media, cultural exchange, and creative connections. *Curator: The Museum Journal* 54(3), 327-346.

Simon, N. (2010). *The Participatory Museum.* Santa Cruz, CA: Museum 2.0.

Simon, N. (2008, Oct 27). How (and why) to develop a social media handbook [Web log post]. Retrieved from http://museumtwo.blogspot.com/2008/10/how-and-why-to-develop-social-media.html

Smith, A. (2012). "Open Science, Citizen Science – Unleashing the Power of Community Collaboration to Create New Museum Science." *Museum Computer Network 2012*, Seattle, WA.

Stratford Institute for Digital Media. (2012). *Becoming a Digital Nation: An Evaluation of Provincial and Territorial eGovernment Initiatives.* Stratford, Canada: The Stratford Institute for Digital Media. Retrieved from http://stratfordinstitute.ca/wp-content/uploads/2012/04/eGovernment_final_web.pdf

Trant, J. (2006). Exploring the potential for social tagging and folksonomy in art museums: Proof of concept. *New Review of Hypermedia & Multimedia*, (12)1, 83-105.

Waterton, E. (2010). The advent of digital technologies and the idea of community. *Museum Management and Curatorship* 25(1), 5-11.

Wetterlund, K. (2012). The Voice of Authority. *Journal of Museum Education*, 37(2), 89-92.

7 Table of Figures

Figure 1: Museum activities in Twitter that are engaging.....492

8 Table of Tables

Table 1: Coding dimensions 488
Table 2: Content dimension by disciplinary type 490
Table 3: Frequency dimension by disciplinary type.....490
Table 4: Engagement dimension by disciplinary type.....491