Do Museums Worldwide form a true Community on Twitter?

Some insights on the museum Twitter ecosystem through Social Network Analysis and Network Science

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Do Museums Worldwide form a true Community on Twitter?

Why this study?

Since the moment Social Networks became mainstream, there have been thousands of conferences, papers and blog posts talking about things such as the new paradigm of communication that Social Networks have brought, knowledge and experience sharing, bidirectional communication, user feedback, and so on.

Our paper wants to assess to what extend whether this is true for museums, or if it is still mostly an unrealized possibility.

Goals

We are trying to answer the following questions:

- Do worldwide museums form a community on Twitter? Or several different communities?
- In the latter case: which is the main criterion that explains the observed community structure: topic (i.e. contemporary art museums on one community, archaeological ones on another), language or country? Do Twitter communities mimic the offline relationships patterns?
  - The answers to these questions have consequences on how Museums actually use Twitter, and if it is used to share experiences and knowledge.
• Which are the communities? Which are the key players in each community?
• Does the small world principle apply? If it does, to what extent?
• Are there structural holes, that is, museums that relate otherwise unrelated groups? Which are these key players in group connection and information spread?
• Which are the most influential museums, not in terms of followers, but in terms of influence within the group of museums? Which is the role played in this fact by the museum language and location?

Scope

Our starting point was the list of museums and Twitter profiles on museum-analytics.org, whose team has done an amazing job gathering all this information. We started the study in late spring 2013. At that time, Museum Analytics contained some 3,300 museums, about 1,950 of which had a Twitter account. We have gathered all tweets from these museums during a whole year, except direct messages which are private.

The study focuses on the interaction between museums: retweets (RT), modified tweets (MT) and mentions (@), as these topics show the real relationships between museums, and allow for a much more detailed analysis than the who follows who graph.

We have gathered the data through Twitter API, and analyzed it with the tools of Social Network Analysis and Network Science. We have used in-house software to gather and parse the information, and Gephi to create the visualizations.

A graph is a set of objects (usually called nodes) where some pairs of objects are connected by links (also called edges). In the graphic

1. en.wikipedia.org/wiki/Social_network_analysis i en.wikipedia.org/wiki/Network_science
2. https://gephi.org/
layout, nodes are small circles, whose size reflects their relevance in the conversation, and links are lines or arrows between nodes. In our case,

- The **nodes** are museum’s **Twitter profiles**.
- The **links** are **retweets**, **modified tweets** and **mentions** between them. If a tweet mentions two or more users, then it renders in several arrows from the user who has published the tweets to the mentioned users.

In Graph Theory jargon we would call our graph weighted and directed:

- Links have **weights** to reflect the number of RTs, MTs and mentions between two museums. This is a key feature to track the strength of a relationship.
- Links are **directed**, as a RT or MT is an acknowledgement of the original tweet’s worth.

**Why do we use mentions and RTs as the base of our analysis and not a “who follows who” base?**

We have also gathered the list of users followed by each museum to draw the follower’s graph. But

- It does not seem to reflect the real relationships within the museums community. On average, a museum follows a lot of other museums, but only talks to few of them.
- Many following relationships are reciprocal between museums (out of politeness we may guess). But the real relationships are not. The big players cannot have a reciprocal relationship with all the museums interested in relating with them. But they can follow back.
- Following relationships are not weighted, so we cannot assess differences in the strength of the ties between museums.
The study in figures

- 12-month data: from May 2013 to May 2014.
- 1,924 museums with an active Twitter profile
- And using Twitter API we have got all their tweets from May 2013.
- 3,627,134 tweets gathered and parsed, 1,546,168 from the 12-moths analyzed.
- 79,362 interactions among museums
- 18,905 unique interactions (that is excluding weights/repetitions).
- 1,546 museums that have either mentioned (or RT) other museums, or being mentioned by them. In most cases, both.

That allows us to make the first remarks:

- Almost 20% of museums with a Twitter account have not mentioned and have not been mentioned by another museum in a whole year.
- The average number of mentions received (this includes RTs and MTs) is 51.3 by 12.2 different museums. So the average weight of a connection is 4.2.
- Museums have published an average of 800 tweets each during the analyzed year.
The big picture

These results can be represented in the whole graph, which includes all 1,546 museums that have interacted with another museum at least once in the analyzed year, and all the interactions within this group.

The graph is too dense to be useful as a tool of visualization. We need to trim the connections that are of less relevance, in order to show a clearer rendering that will allow us to deepen into the community structure and highlight the main nodes. In the calculations shown below, we’ll use the complete dataset.
This is the graph after erasing weight 1 connections - these are the connections that have only happened once in the analyzed year. Use the link at the end of the paper to access a webpage with high resolutions images of all the graphs and additional downloads.
Community structure

There’s a clear country grouping in the interactions between the museums.

There’s a clear country grouping in the interactions between the museums.

Those who attended our presentations in Florence or Baltimore, or that have read our Slideshare keynote, will see some changes from the graphs presented at the conference. As the dataset has growth, the community structure has evolved.

The use of Twitter by museums has not remained static during this year. This is particularly true in some European countries.

Some facts have had a significant impact in this change in community structure:

- Museums and the Web Florence (February) along with previous local initiatives, helped to increase the Twitter presence of Italian museums and their relationships with museums in other European countries, mainly UK and Spain.
- The #museumweek initiative in late March fostered the relationships between European museums of different countries. The participant countries were UK, France, Italy and Spain. Until then, the interaction between Italian, French, Spanish and German museums had been very low. Their interactions with UK museums were greater. This is not the case for the UK and smaller countries like the Scandinavian ones and Netherlands, where lot of people speak English fluently.
• Twitter is finally becoming a mainstream communication tool for French and Italian museums. The change has happened during the year analyzed in this study. Spain, Germany, UK, etc. were already quite active at the time the study started.

• There has been an increase of connections between US museums and museums from different European countries. During the first few months, most of Europe-US connections were through UK museums, but the network seems to be evolving into a more decentralized p2p structure.
  - The UK is slowly losing its hub position between US and continental Europe. Not because UK museums are less active, which they are not, but because there is a growing number of links between museums of different countries.

The fact that the communities are structured by country grouping and not by topic or even language has a significant implication about how museums use Twitter. If Twitter is really becoming the main tool for day to day museum exchanging of information and experiences, then topic grouping should be at least as significant as country grouping. And language should have a greater impact in community structure than it has now. Now US and UK are close but form different communities (so are Canada or Australia), the same happens in the two main Spanish-speaking countries in the graph: Spain and Mexico.
Interaction rendered over Google Earth

Interactions between museums from different countries showed on Google Earth. UK museums are still the main connection between US and Europe.
A graph is a powerful tool to analyze complexity, and in complex environments there are usually many ways to order the players by relevance.

Main players

A graph is a powerful tool to analyze complexity, and in complex environments there are usually many ways to order the players by relevance. Each one reflects a particular aspect of the position within the underlying relationships. They can be seen as tools to perform different operations and not as an absolute ranking, and from this tool box we choose the ones that best suit the goals of our analysis.

In the following table we show the museum’s ranking according to two of these measures:

- The first one reflects the number of received mentions, RTs and MTs, weighted by the importance of the museum in the graph (not their absolute number of followers or their Klout score, but their relevance in the Twitter talk within the museums community).
- The second one is a version of Google’s PageRank, which is a graph centrality measure to assess the relevance of each node. This is a better way to detect key players.

We have also included the previous one because the comparison between the two helps to throw light to what relevance means and that sometimes the most obvious variables are not the best ones, and we need to choose more abstract and subtle tools to better assess the graph characteristics and its key players.

- Apart from museums we have included a few profiles of people very active at Twitter talking with and about museums, and also some museum-related initiatives. We do not intend to be systematic with this kind of profiles, but to show the influence they can reach.
### Received mentions

Some of the museums in the ranking by received mentions are not a surprise, but there are some unexpected contenders:

- Mar Dixon is in the first position. She is more mentioned by museums than any museum in the world. Social Networks do set a new playfield in communications, even if only some museums take advantage from it.

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4. Difference in position, taking the Page Rank list as the end ranking. The result refers to the museum in the PageRank list and shows the number of steps it has increased or decreased from the previous list.
There are
- 6 US museums
- 5 UK profiles (4 museums + Mar Dixon)
- 5 Spanish museums, all of them in Madrid.
- Two French (Louvre, Pompidou), and one Italian.
- The @followamuseum initiative

The list includes 4 small museums: Queens Museum (around 200,000 visitors a year), Palazzo Madama in Torino (150,000 yearly visitors), and Museo del Romanticismo and Museo Cerralbo in Madrid, both slightly under 100,000 visitors a year. This shows the potential that Social Networks have for small and medium sized museums, even if they have fewer resources than the bigger players.

PageRank as an influence measure

We use PageRank as a way to assess each museum’s influence within the rest of museums, but there are other measures. We have used different centrality rankings, although we only show two in the paper, and when comparing their lists we see some changes, but a core group of museums that are present in all the rankings with just some moving up and down a few steps.

When we use PageRank as a more sophisticated way to assess the relevance of a museum within the Twitter museum community, there are significant changes in the list from the initial naïve ordering.

- The big players move up, and those smaller museums disappear from the Top 20. Queens Museum is in number 29 (which is still remarkable), and the other three drop out of Top 100. The reason for this is that smaller museums usually have a strong relationship
Apart from the two Amsterdam museums, all museums in the Top 20 are from US and UK. Speaking the world language is a key advantage

with a small number of museums, mainly local ones. They are relevant country players, but not yet global players (Queens Museum is the exception). When we assess their global influence they become less relevant. In the case of Madrid's smaller museums, they had a lot of reciprocal mentions, and many local mentions.

- Mar Dixon has a very relevant position. So does another hyperactive Twitter user: @museumnerd. The fact that they both publish in English and are located in the two countries that rank on the top is probably not a coincidence. We have kept them in the charts, and in the country and city lists.
- There are two Netherlands museums not present in the previous ranking, and Spanish, Italian and French Museums disappear.
- Apart from the two Amsterdam museums, all museums in the Top 20 are from US and UK. Speaking the world language is a key advantage. As English is the main language in tweets between museums from different countries, museums from other countries tend favor following and relating to US & UK museums. This is related to the fact that world class museums from other countries such as Louvre or Prado, present in the previous list (and, hence, active influential at Twitter) drop from the top 20 most influential museums.

- The country distributions is very different:
  - US: 10
  - UK: 8
  - Nederlands: 2

- And all these museums are located in 5 major cities:
  - London: 7
  - New York: 4
  - Washington: 3
  - Los Angeles: 2 (plus one in San Francisco)
- Amsterdam: 2
- Other UK: 1

London and US East Coast are the two major spots, and museums in these areas benefit from being close to the key world players.

- In the Top 50 Ranking, US and UK keep coping most of the list. [You can download the whole 1,500 museum ranking following the link at the end of the paper]. And London reinforces its place as the top 1 hub, followed by New York and Washington.

- Museums from Paris, Rome, Florence, Madrid, Athens, Berlin, etc. are out of the list. And the presence of Amsterdam is related to their use of English, apart from the two obvious factors: the museums’ importance and their commitment with Social Networks and more broadly with Internet as a key asset in their communication and public service strategy.

- Of course, when referring to continental European museums, language is not the only factor. There are also key differences in museum culture, funding sources, etc. that influence this result.

The following charts show the country distribution of the lists related to different steps of our analysis. We start from the most general list (museums at museumanalytics.org) and end with the Top 20 museums according to their influence. There is a clear graduation with some countries steadily gaining importance, while others loose it.
TOP 100

- United States
- United Kingdom
- Mexico
- Spain
- Brazil
- Turkey
- France
- Netherlands
- Argentina
- South Korea
- Canada

Top 20 (PageRank) by country

- US: 50%
- UK: 40%
- NE: 10%

Top 20 (PageRank) by city

- London: 35%
- NY: 20%
- Washington: 15%
- Amsterdam: 10%
- Los Angeles: 10%
- San Francisco: 5%
- Other UK: 5%
Influence within the museum’s community and Twitter followers

The following table shows the top 20 museums in influence within the Twitter museum community compared to their place in the followers’ ranking.

<table>
<thead>
<tr>
<th>TOP PAGE RANK</th>
<th>Position by Twitter followers</th>
<th>Number of followers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan</td>
<td>7</td>
<td>735,494</td>
</tr>
<tr>
<td>Tate</td>
<td>3</td>
<td>1,119,234</td>
</tr>
<tr>
<td>British Museum</td>
<td>21</td>
<td>320,631</td>
</tr>
<tr>
<td>MOMA</td>
<td>1</td>
<td>1,726,784</td>
</tr>
<tr>
<td>Mar Dixon</td>
<td>474</td>
<td>7,554</td>
</tr>
<tr>
<td>Smithsonian</td>
<td>2</td>
<td>1,214,173</td>
</tr>
<tr>
<td>museumnerd</td>
<td>30</td>
<td>177,266</td>
</tr>
<tr>
<td>Victoria and Albert</td>
<td>18</td>
<td>390,316</td>
</tr>
<tr>
<td>American History Museum</td>
<td>69</td>
<td>74,279</td>
</tr>
<tr>
<td>Guggenheim</td>
<td>6</td>
<td>961,453</td>
</tr>
<tr>
<td>Rijksmuseum</td>
<td>121</td>
<td>39,180</td>
</tr>
<tr>
<td>Science Museum</td>
<td>19</td>
<td>358,516</td>
</tr>
<tr>
<td>National Gallery of Art</td>
<td>98</td>
<td>50,608</td>
</tr>
<tr>
<td>National Gallery</td>
<td>25</td>
<td>239,372</td>
</tr>
<tr>
<td>San Francisco Museum of Modern Art</td>
<td>15</td>
<td>449,443</td>
</tr>
<tr>
<td>Natural History Museum of London</td>
<td>11</td>
<td>556,462</td>
</tr>
<tr>
<td>LACMA</td>
<td>17</td>
<td>406,954</td>
</tr>
<tr>
<td>J. Paul Getty Museum</td>
<td>12</td>
<td>500,960</td>
</tr>
<tr>
<td>National Portrait Gallery</td>
<td>51</td>
<td>111,214</td>
</tr>
<tr>
<td>Van Gogh Museum</td>
<td>63</td>
<td>84,120</td>
</tr>
</tbody>
</table>

There is a correlation between the two rankings, but there are also a lot of differences:

- Some of the Top 10 museums in number of followers are not in the Top 20 (some not even in the Top 50) most influential within other museums: as Saatchi Gallery and London’s Design Museum, 4th and 5th in the followers ranking, both over a million followers.
The small world principle apply to the museums’ network: the maximum distance between two museums is 8, and the average is as low as 3.4.

Small world principle within museums

The small world principle stands in a network if, despite an average node is connected only with a few nodes, it can reach most of the network with only a few steps. Networks may or may not comply with this condition, but Social Networks tend to comply. The small world principle is the six degree of separation of folk culture.

In our case the principle applies: the maximum distance between two museums is 8, and the average is as low as 3.4. That means that although museums do not form a unique community, the cross-country flow of information is strong enough to approach museums. That reflects a fact about how Twitter is being used, but also the possibility many museums have to reach other museums profiting from the underlying relationships. That stands also for small museums with local audiences. They can share experiences with the big players. That may be felt natural now, but it was not the case 5 or 7 years ago. The results show that this is a real feature of the museums network, whose average distance is lower than in other networks of the same size we have analyzed.

Asia and Latin America. Limits to the small world principle.

Asian and Latin America Museums are absent from the top 100 museums in our lists according to different relevance criteria, both in those we have included in this paper and in other lists we have used but not included in the paper. All museums in our Top 100 lists are from Europe –mainly Western Europe—, US and Canada.
In the Top 50 museums according to their number of Twitter followers we find 4 Mexico Museum’s, two from Turkey and one from Brazil. From positions 51 to 100, the percentage of Latin American Museums rises.

The list of most visited art museums in the world from The Art Newspaper is far from perfect, but is a good starting point to run a comparison. Its 100 museums include many out of Western Europe, US and Canada:

- 8 Australian Museums
- 5 from South Korea
- 4 from Japan
- 3 from China
- 1 from Taiwan
- 3 from Brazil
- 1 from Mexico
- 1 from Greece
- 2 from Israel
- 4 from Russia
- 1 from Turkey
- The other countries are those we have found in the graphs: US, UK, France, Italy, Spain, Netherlands, and then Germany and Austria.

These museums represent about 30% of the Top 100 list. But their countries are underrepresented in our lists:

- Australia and Israel, both culturally but not geographically part of the West, are underrepresented.
- Latin America:
  - We have museums from Mexico and Brazil but well under they position in rankings such as Twitter followers or museum visitors.

- Mexico has its own community in our graph but it is quite isolated. This prevents Mexican museums to achieve an influential position. They relate to Spanish Museums, but to a much lesser extent than Spanish Museums relate with other European Museums. And they have scattered connections with US museums, even with those in California.

- Brazil does not have a community, and is well underrated, which is strange in one of the world’s most active country on Twitter\(^6\).

- But Latin American museums from different countries do not interact between them. They have more links with the US and Western Europe, than among them.

- Asia\(^7\) (excluding Turkey)
  - South Korea\(^8\) and Japan\(^9\) museums do not have a Twitter relationship with other museums, not even with Asian ones, although there are a few of them with a Twitter account. In the case of South Korea, MOCA is an important account with almost 70,000 followers.
  - Twitter is banned in China, so there is no possible connection with Chinese museums through Twitter.

- Russia is also underrepresented. In May 2014 there have been initiatives to arise the presence of Russian Museums on Twitter, but it is early to see the effect. It’s also important to know to which extend will they publish in English, allowing a greater connection with the international group.

Our starting list may contain some bias, but it includes most major players from these countries\(^{10}\), so the reason for this may lay in a combination of three factors:

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6. Source: 2013 Brazil Future in Focus, ComScore, March 2013
7. Source: 2013 South-East Asia Future in Focus, ComScore, July 2013
8. Source: Digital in the Round & Intead
• A certain degree of euro centrism. This may be particularly relevant in the case of Latin America, as there are heavy Twitter users and most of the people with a certain professional level are able to communicate in English, probably more than in some continental Europe countries.

• In the case of South Korea, Russia or Japan the number of professionals being able to communicate in English may be limited.
  - It is not related with Twitter popularity which has increased in these countries. In 2013 Twitter was the second Social Network in Japan (after Facebook), third in South Korea, but only ninth in Russia (2012).

• Political factors that have led to a different Social Media Landscape. This is the case of China and, to a lesser extent, of Russia.

As a result of this, the small world principle applies for Western Europe, US and Canada. It applies in a lesser extend to museums in neighbor countries (geographically or culturally) such as Mexico, Australia and New Zealand. And it does not apply to the most part of Latin America and Asia.
Do Museums Worldwide form a true Community on Twitter?

Case studies

We are now going to deepen into some countries and museum cases. We have chosen them because they are both important players and examples that allow us to highlight some features that are shared with other cases.

Country

US

The graph we show below is a subset of the main worldwide graph, and includes only interactions between US museums.
Metropolitan, MoMA and Smithsonian (their main Twitter profile) are, in this order, the Top 3. They are also the museums more closely related with foreign museums.

These are the Top 20 US museums according to their influence worldwide.

<table>
<thead>
<tr>
<th>Top US museums</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan</td>
<td>NYC</td>
</tr>
<tr>
<td>MOMA</td>
<td>NYC</td>
</tr>
<tr>
<td>Smithsonian</td>
<td>Washington</td>
</tr>
<tr>
<td>museumnerd*</td>
<td>NYC*</td>
</tr>
<tr>
<td>American History Museum</td>
<td>Washington</td>
</tr>
<tr>
<td>Guggenheim</td>
<td>NYC</td>
</tr>
<tr>
<td>National Gallery of Art</td>
<td>Washington</td>
</tr>
<tr>
<td>San Francisco Museum of Modern Art</td>
<td>San Francisco</td>
</tr>
<tr>
<td>LACMA</td>
<td>Los Angeles</td>
</tr>
<tr>
<td>J. Paul Getty Museum</td>
<td>Los Angeles</td>
</tr>
<tr>
<td>Whitney Museum</td>
<td>NYC</td>
</tr>
<tr>
<td>National Museum of Natural History</td>
<td>Washington</td>
</tr>
<tr>
<td>Studio Museum Harlem</td>
<td>NYC</td>
</tr>
<tr>
<td>Walker Art Center</td>
<td>Minneapolis</td>
</tr>
<tr>
<td>Art Institute</td>
<td>Chicago</td>
</tr>
<tr>
<td>Queens Museum</td>
<td>NYC</td>
</tr>
<tr>
<td>Museum of Fine Arts</td>
<td>Boston</td>
</tr>
<tr>
<td>Detroit Institute of Arts</td>
<td>Detroit</td>
</tr>
<tr>
<td>Smithsonian AirSpace</td>
<td>Washington</td>
</tr>
<tr>
<td>New Museum</td>
<td>NYC</td>
</tr>
</tbody>
</table>

8 are located in New York and 5 in Washington.

The Smithsonian Institution has 4 Twitter accounts on the Top 20: the main account, the American History Museum, the Natural History Museum and the Smithsonian National Air and Space Museum.
The Strength of the Smithsonian form a Washington centered subgroup inside the American group.

The Strength of the Smithsonian, which has other relevant Twitter accounts, and the close relationship between some Smithsonian’s Twitter profiles, form a Washington centered subgroup (in yellow) inside the American group (most of it in brown).

The community analysis, done by applying a modularity algorithm, is a dynamic process that can be stopped at any moment. We have stopped it at the point that most clearly showed the worldwide structure. In case we went deeper, we would see East Coast and Mid-West museums split from West Coast.

The following graph takes into account only interactions within American Museums, while the previous one included their worldwide interactions. There are some changes in the list of the top influencers.
<table>
<thead>
<tr>
<th>Top US museums (Worldwide relevance)</th>
<th>Top US museums (relevance within the US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan</td>
<td>Queens Museum</td>
</tr>
<tr>
<td>MOMA</td>
<td>Smithsonian</td>
</tr>
<tr>
<td>Smithsonian</td>
<td>American History Museum</td>
</tr>
<tr>
<td>museumnerd*</td>
<td>museumnerd*</td>
</tr>
<tr>
<td>American History Museum</td>
<td>Metropolitan</td>
</tr>
<tr>
<td>Guggenheim</td>
<td>Guggenheim</td>
</tr>
<tr>
<td>National Gallery of Art</td>
<td>Studio Museum Harlem</td>
</tr>
<tr>
<td>San Francisco Museum of Modern Art</td>
<td>San Francisco Museum of Modern Art</td>
</tr>
<tr>
<td>LACMA</td>
<td>MOMA</td>
</tr>
<tr>
<td>J. Paul Getty Museum</td>
<td>LACMA</td>
</tr>
<tr>
<td>Whitney Museum</td>
<td>MCA Chicago</td>
</tr>
<tr>
<td>National Museum of Natural History</td>
<td>National Museum of Natural History</td>
</tr>
<tr>
<td>Studio Museum Harlem</td>
<td>Smithsonian AirSpace</td>
</tr>
<tr>
<td>Walker Art Center</td>
<td>de Young Museum</td>
</tr>
<tr>
<td>Art Institute</td>
<td>National Gallery of Art</td>
</tr>
<tr>
<td>Queens Museum</td>
<td>J. Paul Getty Museum</td>
</tr>
<tr>
<td>Museum of Fine Arts</td>
<td>NY Historical Society Museum</td>
</tr>
<tr>
<td>Detroit Institute of Arts</td>
<td>Smithsonian NMAAHCl</td>
</tr>
<tr>
<td>Smithsonian AirSpace</td>
<td>Pequot Museum</td>
</tr>
<tr>
<td>New Museum</td>
<td>Walker Art Center</td>
</tr>
</tbody>
</table>

**UK**
Museums

Metropolitan

The Metropolitan ranks seventh in number of followers and sixth in number of received mentions, but it is the most influential museum on Twitter for the museum community. It’s highly influential within US museums, but it also has strong ties with first and second order players in UK, France, Spain and the Netherlands.
Tate Gallery

Tate Gallery is the second most influential museum on Twitter according to our analysis. A comparison between the Metropolitan's Twitter environment and Tate's environment show some significant differences. Tate's Gallery environment is even more international than Met's, although the fact that Metropolitan is part of the biggest key country, biases the result. Tate initiatives are a referent for many continental Europe museums, and this influence is also reflected on Twitter.

And of course, being the 3rd museum Worldwide in number of Twitter followers (over 1,110,000 followers at the time of writing the paper) helps a lot.
Queens Museum

Queens Museum has been quite an unexpected finding. With 200,000 visitors a year, its 63,000 Twitter followers are a remarkable result. But even with this number of followers is not a museum we expected to play such a significant role.

They are very active at Twitter, and their initiative #EduTues has proven a successful strategy in growing a community and in engaging with other museums. They mention and retweet a lot, not only to museums. And while they only receive on average a mention or a retweet for each four mentions or retweets published by them, this initiative has put them in the map, and granted Queens Museum a scope for their news and exhibitions they would not have had otherwise.

This is a very good example of how a medium sized museum can implement a successful strategy on Social Networks.
Smithsonian

The environment of Smithsonian’s main Twitter accounts:
Conclusions

The small world principles applies in Europe, US and Canada, and it makes Twitter a very useful tool for museums wanting to engage with other museums worldwide.

Most museums are not taking advantage of the opportunities that Twitter offers. Their main pattern of relationship is local; probably mimicking offline relationships. As a result of this, communities match country groups. The main criterion for explaining community structure is country, not language, as US, UK and Australia form different communities like Spain and Mexico.

Topic plays a secondary role on interaction patterns; there is not an archaeological museums community, or a contemporary art community... That would have reflected a maturity in Twitter’s use.

Despite of that, there is a significant and growing flow of information. The small world principles applies in Europe, US and Canada, and it makes Twitter a very useful tool for museums wanting to engage with other museums worldwide, sharing experiences and learning from other museum’s experiences.

During the year analyzed there have been some significant changes, which reflects an evolution on the use of Twitter:

- An increase in cross country interactions.
- A significant increase of the activity of French and Italian Museums.
Conclusions

There is a small set of key players spreading the information and relating among museums worldwide. They ease the flow of information, but it does not depend on them (the network has not real structural holes). There is an increase in cross country interactions between smaller museums.

How can this study help your museum?

Analyzing how museums relate to each other helps to detect opportunities to engage in the global talk, which has benefits in expertise, experience exchange, information sharing and Twitter follower’s growth. Some of the best practices are:

- Detect key players, analyze how they work on Twitter, and relate to them (check Queens Museum case as a museum that is not the world league and its relating to the big players and taking advantage from it. Check also Palazzo Madama’s leading position in Italy).
- Became a key player in your area (country, region, topic), and go bigger.
- Connecting to the main component with your local or topic-based community can be the first step. And, unless you are in the US and the UK, being bilingual is a must. In the case of the US and UK it is not mandatory, but it is always advisable.
- Use SNA approach to improve your work on Twitter, your communication campaigns and the relationship with your followers.

Next steps

The study we have presented in this paper is a part of a broader long term research about Social Network use within museums, museum professionals, museum enthusiasts.

We are starting two new researches:

- How museums relate to their followers. Twitter API costs and computing power make impossible to do a worldwide analysis so we
are choosing relevant players from different countries in partnership with the museums. We intend to analyze one relevant case in the US, UK, Spain and Italy.

- How museum professional relate and their most popular topics, through the analysis of hashtags such as #musetech.

**Your museum’s graph of interactions with other museums**

The dataset that we have gathered and parsed allows us to easily generate the graph of any museum surroundings (limited to interactions with other museums), such as those we have shown of Metropolitan, Tate, etc.

If you want it, you can write to alex@lamagnetica.com

**High resolution graphs and additional rankings**

They can be downloaded at:
