

Understanding the Cultural Value of the BBC World Service: A Case Study Analysing Twitter Conversations around the BBC's 100 Women Season



Digital Data Analysis Report

This research forms part of the evidence for the Cultural Value Project

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Cover image from 100 Women in pictures: <http://www.bbc.co.uk/news/in-pictures-25050751>

Executive Summary of Findings:

This research report presents analysis of Twitter data collected during the BBC's 100 Women season in October 2013. The data includes tweets from a variety of sources; BBC accounts, the 100 women themselves, and individuals or organisations joining in via social media.

The 100 Women season aimed to provoke a large scale conversation on Twitter in which users from all over the world participated in a shared public space/sphere of debate, contributing to the World Service's stated aim of fostering global conversations which transcend national, ethnic and religious boundaries.

The season achieved 2.5 million page views on the English language BBC.com. This represents 1% of total page views for the site across both desktop and mobile during the season. However, the research presented in this report demonstrates that while Twitter provided the opportunity to achieve large scale reach or exposure, the season was less successful in achieving the aim of provoking a large scale conversation via the micro blogging platform.

The results of the analysis, when taken collectively, highlight opportunities to enhance a range of the components which drive cultural value. While individual accounts performed well at the tactical level of fulfilling everyday tasks, there are opportunities to develop greater value by developments at a strategic level that would facilitate greater collaboration between accounts run by different parts of the BBC. Developing a diverse slate of Twitter accounts with the explicit intention of adopting different modes of interaction with Twitter users, could lead to greater collaboration and the delivery of cultural value, while still remaining within the BBC editorial guidelines for using blogs and microblogs.¹

We characterise the roles and models of interaction an account may play in the 'Twittersphere' as the 'broadcaster', 'bridge', 'curator', and 'facilitator', outlined in detail in appendix 1. Each of these roles brings with it a different relationship between that account, and those who engage with it. As a result, each role brings high values for some components of cultural value. Judiciously balancing a slate of accounts which act collectively offers the potential for high returns across a variety of cultural value components. For example we saw in our data that some BBC journalists accounts, and some organisations and pressure groups, were reach multipliers as they acted as 'bridges' to new groups on Twitter. By considering what they are doing to succeed in this role the beneficial effects for both engagement and reach could be extended to other accounts. The findings which have contributed to this conclusion are summarised below:

¹ Blogs and Microblogs, Social Networking, Microblogs and other Third Party Websites: BBC Use Guidance in Full, <http://www.bbc.co.uk/guidelines/editorialguidelines/page/guidance-blogs-bbc-full#blogs-and-microblogs>

The cultural value of the 100 Women season was recognised by users in a number of ways:

- *According to BBCWS data, a large volume of BBC content was accessed by users across different digital media platforms, including page and video views for the 100 women season.*

For the English language BBC.com, “visitors generated over 2.5M page views and 102K video views” for 100 Women content.² Putting this context, “page views to the 100 women content represented 1% of total page views across both desktop and mobile”.³

The same report concluded “video content did not perform particularly well. The top 10% of videos tend to get between 20K and 50K views a week. Top performing videos of recent times such as the Kenya stand off footage, US shutdown, Pakistan earthquake all typically attained between 100 and 150K.”⁴

- *On Twitter, our data showed the 100 women season successfully generated a reasonable amount of traffic for the hashtag promoted for the season (#100women).*

Over 14,000 tweets were observed on the day of the 100 Women conference using #100women, the tag promoted for by the BBC. Over 8,000 were retweets, the majority of which were users retweeting BBC content. These users valued BBC content enough to share it and, as they left the text largely unchanged or shared links to content, these users acted as reach multipliers for the 100 women season. These are useful indicators when considering reach, utility and quality value of the content.

A BBC internal report noted that “100women stats combined reached 45k” referring to BBC 100 Women season hashtags “in both English and in language”. As a comparison, the BBC internal analysis noted that a “breaking news story such as ‘Migrants at sea’ (03/10) received 720k mentions, it was a big social media story on the day it dropped. A ‘moderately’ performing story on social media was the India cyclone (12/10) which received 132k mentions”.⁵ Although it is important to reflect

² 100 Women; Audience Impact Evaluation; Detailed Summary, *Audience Insights* (BBC Internal Document) Video data refers to videos which included ‘100 Women’ in the title

³ 100 Women; Audience Impact Evaluation; Detailed Summary, *Audience Insights* (BBC Internal Document)

⁴ 100 Women; Audience Impact Evaluation; Detailed Summary, *Audience Insights* (BBC Internal Document) Video data refers to videos which included 100 Women in the title

⁵ 100 Women; Audience Impact Evaluation; Detailed Summary, *Audience Insights* (BBC Internal Document) It is unclear in the report how this comparison is made. The quote originates from a section comparing the performance of hashtags, however, the examples offered for comparison contain spaces, which prevent them from being hashtags. As a result it is difficult to ascertain the nature of the comparison.

that the 100 Women season was not a 'breaking' news story in the same sense as those receiving higher mentions.

- *The BBC was able to provide news which was locally resonant, by tweeting from a wide variety of accounts with varying agendas.*

The 100 women season reached users in a way which responded to their particular interests and needs. In tweets containing #100women, 15 of the 50 most retweeted or mentioned accounts contained 'BBC' in their username. These included a range of different BBC accounts tweeting about 100 Women, from BBC journalists using their own name in their hashtag, through to large corporate accounts. It was also observed that even the large corporate accounts such as BBCWorld, BBCNews, BBCAfrica tended to interact with more or less discrete groups of users, demonstrating their appeal to differing demographic and interest based groupings. This demonstrates distinctiveness, cosmopolitan and national/global value.

- *The 100 women season created a high level of engagement for some specific groups of prominent Twitter users. These users contributed content, and also extended the reach of the 100 Women season.*

These non-BBC accounts fell into two broad categories:

- Firstly, the 100 women themselves were active tweeters of their own content. For example, Helen Clark, Administrator of the UN Development Program (@HelenClarkUNDP), tweeted live from the conference. Those among the 100 women who already had a significant Twitter presence, like Helen Clark, became important players in the network. However it is important to note that those with only small followings had little impact in comparison, and #100women did not boost their visibility.
- Secondly, some organisations such as Oxfam, Equality Now, Women's Aid, and the Department for International Development (DFID), used #100Women and added content. These tended to engage small but very active groups, primarily of tweeters who already have a pre-existing interest in the subject matter. These groups were observed taking part in multi-directional conversations.

Our research also indicated that some aspects of cultural value were not maximised for 100 Women:

The following were observed in our data:

- *Interactions on Twitter did not sustain engagement.*
The data showed that tweets, retweets and mentions spiked on the morning of the 100 women conference, before then dissipating rapidly. Between 0900 and 1200 on the 25th October, we observed a little over 1,500 tweets an hour. However, by the same time period on the following day the rate had dropped significantly, and varied between 74 and 116 tweets an hour.
- *The BBC social media accounts worked well individually, but less so collectively.*
Many accounts reached a relatively large group of Twitter users. However, for the majority of users, interaction with one BBC account did not lead them to engage with further BBC accounts active in the 100 Women season. This emphasises the importance of collaboration between social media accounts run by different parts of the BBC.
- *The 100 women season did not translate into ‘conversations’ between twitter users.*
Most of the interactions observed were retweets or mentions of BBC accounts, rather than peer-to-peer discussion. For example, the majority of twitter users engaged with a single BBC Twitter account, and did so only once.

These factors collectively indicate that, where discussion took place, it was between small groups of users, rather than the global conversation amongst a large and geographically dispersed group of participants envisaged in the BBC World Service’s stated aim.

Our findings provide insight into potential for enhancing cultural value on Twitter around future events and seasons:

- *BBC accounts could expand opportunities to share materials from non-BBC accounts, and user generated content.*
Many BBC accounts retweeted other BBC accounts almost exclusively, rather than sharing or amplifying other content. For example, all 11 Twitter accounts retweeted by @BBCWorld during the 100 Women season were other BBC corporate accounts or BBC journalists. At the least, content from the conference participants, who are

tweeting about the conference, could increase the cultural value the season delivered by increasing the level of engagement between the BBC and participants.

- *An increased emphasis on acting collectively could drive greater cultural value.*
For example, BBC journalists were observed acting as ‘bridge’ figures between BBC corporate accounts and specific groups of users, such as those in a specific geographical location, using a different language, or invested in a particular issue. Greater emphasis could be placed on these interactions as the potential value for future events is that the groups engaged by journalists tended to be more active than the average user – both in the number of their retweets, but also in terms of adding content and new links. In effect this would move toward a more sustained engagement.
- *Accounts such as BBCOS (Outside Source) or BBCWHYS (World Have Your Say) and the journalist Ros Atkins provide potential models for BBC programs developing greater user participation.*
These accounts demonstrated that the BBC can approach social media content in a way which supports the sharing of user generated content, which can drive greater interaction and foster more sustained interest, thereby also increasing engagement. World Have Your Say and Ros Atkins were both ranked in the top five accounts for how much they retweeted other users about #100women.

Overall Aims and Rationale

This research report presents analysis of Twitter data collected during the BBC's 100 Women season in October 2013. The data includes tweets from a variety of sources; BBC accounts, the 100 women themselves, and individuals or organisations joining in via social media. This report combines different modes of analysis (Network Analysis, Key Actor Analysis and Cluster Concentration Analysis) and provides evidence which, in addition to the BBC's own data, could be used to assess the value of the season through the production of a Cultural Value constellation.

We aimed to understand:

- a) How Twitter conversations developed over the course of the month, and what caused variation in traffic.
- b) How the BBC's Twitter accounts (including corporate and named journalists' accounts) operated in the network (utility value).
- c) Who instigated and drove Twitter conversations.
- d) The scale and scope of Twitter conversations taking place around BBC accounts.
- e) Who was interacting with whom on the network, and what these patterns of interaction tell us about engagement with BBC accounts (participation and engagement value).
- f) The impact of 100 Women in the 'Twittersphere' across nations and languages (cosmopolitan value).
- g) The extent to which the BBC acted as a 'curator' on Twitter, aggregating other relevant content, and as a 'creator' of tweeted content, producing and promoting its own output.
- h) What can be learned for future events, and what alternative strategies may be available for maximising the value of Twitter interactions.

Context - The 100 Women Season

The BBC's 100 Women season ran throughout October 2013, across the BBC. Our research tracked #100Women on BBC World News TV, BBC World Service radio and online at <http://www.bbc.co.uk/news/world-24371433>

The season began with Mishal Hussein interviewing Malala, and culminated on 25th October when 100 remarkable women from around the world came together for a conference at Broadcasting House in London. The 100 women offered their views on projects in which they were involved, and debated the roles and position of women across the globe, setting out their goals for the future. The day was broadcast on BBC TV, radio and online.

The 100 Women season aimed to provoke a large scale conversation on Twitter in which users from all over the world participated in a shared public space/sphere of debate, contributing to the World Service's stated aim of fostering global conversations which transcend national, ethnic and religious boundaries.

Those participating in the conference, or following the debates through the range of BBC radio and online services, were invited to 'join in on social media by using the hashtag #100women' and were told that event organisers would be 'using your tweets and posts in the conference as the day goes on'. <http://www.bbc.co.uk/news/world-24579511>

Examples of BBC content about #100women:

- *As it happened: 100 women conference, live text, 25th October 2013,* <http://www.bbc.co.uk/news/world-24626901>
- *#100Women: Join the conversation, October 4th 2013* <http://www.bbc.co.uk/news/world-23888283>.

The Research Data

Parameters:

- The data in this report was gathered from Twitter only and does not include investigations of web or other activity related to the 100 Women season.
- The data gathered includes tweets from BBC accounts, the twitter accounts of the '100 Women' participants, and individuals taking the opportunity to join in the debates using the season's hashtag of '#100women'
- This report covers only those findings relating to our research, and builds upon the research already done by the BBC about the 100 Women season across all media. It is therefore one of a series of pieces of evidence to be used to populate a cultural value constellation.

Method of Collection:

The data was collected during the 100 Women season by Alex Voss (University of St. Andrews) directly from the public Twitter Streaming API. The Streaming API allows tweets to be accessed in near real-time and harvested on a continuous basis. We began harvesting tweets on 8th October 2013 and by the end of the collection on 7th January 2014 had collected 24,914 tweets in total. These tweets either contained #100women, or were retweets of tweets that contained it. It should be noted that the number of tweets does not reflect the reach of the season but the observable behaviour of users who experienced the season in some form and responded to it via Twitter.

Aims and Types of Analysis:

The analysis of this data focuses on understanding engagement rather than estimating the total reach of the content. We adopted this focus for two reasons, firstly, because the aim of the season was to encourage social media users to join in a conversation, and second, because definitions and methods for estimating total reach on Twitter produce results which vary widely.⁶

- 'Volume of Activity' analysis was used to look at the number of tweets and retweets under the hashtag #100women, and when they happened. This analysis also showed

⁶ This focus on engagement follows a similar method to that described in:

Letierce, Julie and Passant, Alexandre and Breslin, John and Decker, Stefan, 'Understanding how Twitter is used to spread scientific messages', *Proceedings of the WebSci10: Extending the Frontiers of Society On-Line*, April 26-27th, 2010, Raleigh, NC: US.

which accounts were frequently retweeted, or were frequently mentioned. This volume data informed our choice of further analytical techniques to apply to the data.

- ‘Key Actor Analysis’ focuses on identifying important accounts within the information sharing network created by users tweeting and retweeting about #100women. The analysis helped to identify BBC and non-BBC accounts which were influential and assess the different roles these accounts played in the discussion of the 100 Women Season. This type of analysis also allowed a comparison of BBC ‘corporate’ and ‘journalist’ accounts to assess the different the modes of interaction they adopted with other Twitter users.
- ‘Network Analysis’ and ‘Cluster Concentration Analysis’ allowed us to investigate the scope of discussions. Using these approaches it was possible to assess whether discussions that included BBC accounts had different characteristics from those that did not include accounts run by the BBC. The characteristics assessed included how people were engaged, for example the range of sources from which users retweeted content, and whether we could deem interactions to be genuine ‘conversations’.
- By combining the different analytical techniques we were then able to examine to what extent BBC accounts were acting as a curator of content from other Twitter users, or whether they were focusing only on amplifying BBC content.

Below we have provided some examples of our data and analyses that have informed the summary of findings above.

The Results:

Volume Analysis:

This section identifies the key periods for content sharing, the important Twitter users and the frequently shared content. It demonstrates that the 100 Women season was successful at gaining attention, that it was able to tailor content to specific user groups and that the BBC was able to engage other important Twitter users as reach multipliers. However, this section also demonstrates that interest or engagement in 100 Women on Twitter could not be sustained.

Volume of Tweets:

Our raw data indicated that the 100 Women Season generated significant interest, but that it was largely confined to a clear peak in Tweets around the 100 Women conference on the 25th October rather than across the entire season. The volume of retweets and @mentions also followed this pattern. Tweets, retweets and @mentions all show a degree of build up in traffic ahead of the conference, but activity tailed off rapidly afterwards (Fig.1). This indicates that users respected the specific content contributing to engagement as an element of cultural value, but it did not develop into sustained engagement under the #100women hashtag.

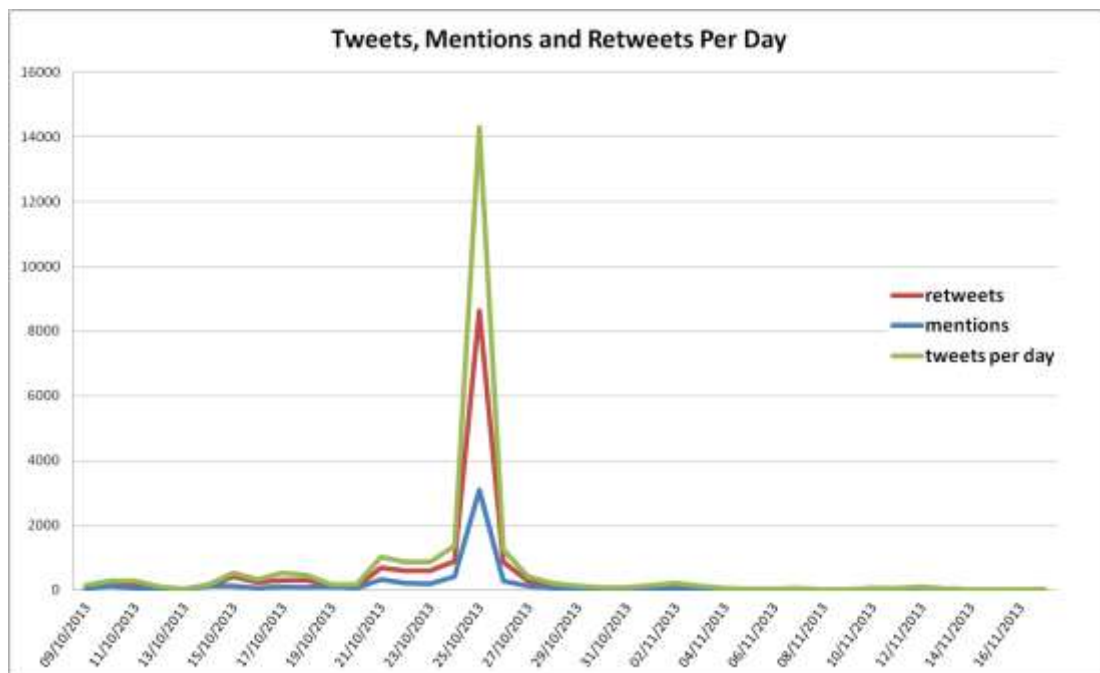


Figure 1. Tweets, Mentions and Retweets Per Day. This figure represents the total number of times people tweeted with #100women hashtag each day from 09/10/2013 to 16/11/2013.

A plot for tweets-per-hour for the 24th to 26th August shows a similar story. The 100 Women season generated interest in joining the conversation around the season, but the BBC could not develop that interest into sustained engagement (Fig.2). In this hourly view, use of the #100women tag reached its highest peak during the morning of the conference, at a little over 1,500 tweets an hour, before declining during the afternoon and dwindling to between 74 and 116 tweets per hour by the following morning.

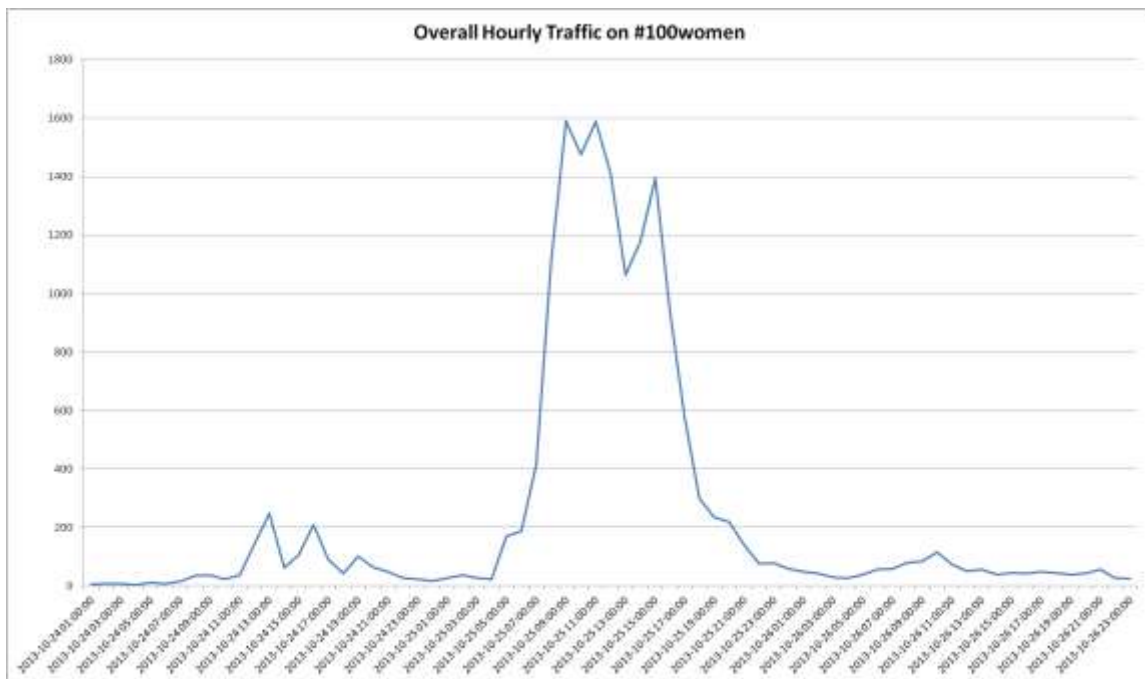


Figure 2. Overall Hourly Traffic on #100Women. This figure represents the total number of times people tweeted with #100women hashtag each hour throughout the day of the conference.

Most engaging Twitter accounts:

The analysis of the number of times users were retweeted shows that specific BBC accounts were able to produce content that users deemed worth sharing. This is demonstrated by Fig 3 which shows the top 10 mentioned accounts in our data. 7 out of 10, including all of the top 5, are BBC accounts, with BBCWorld dominating.

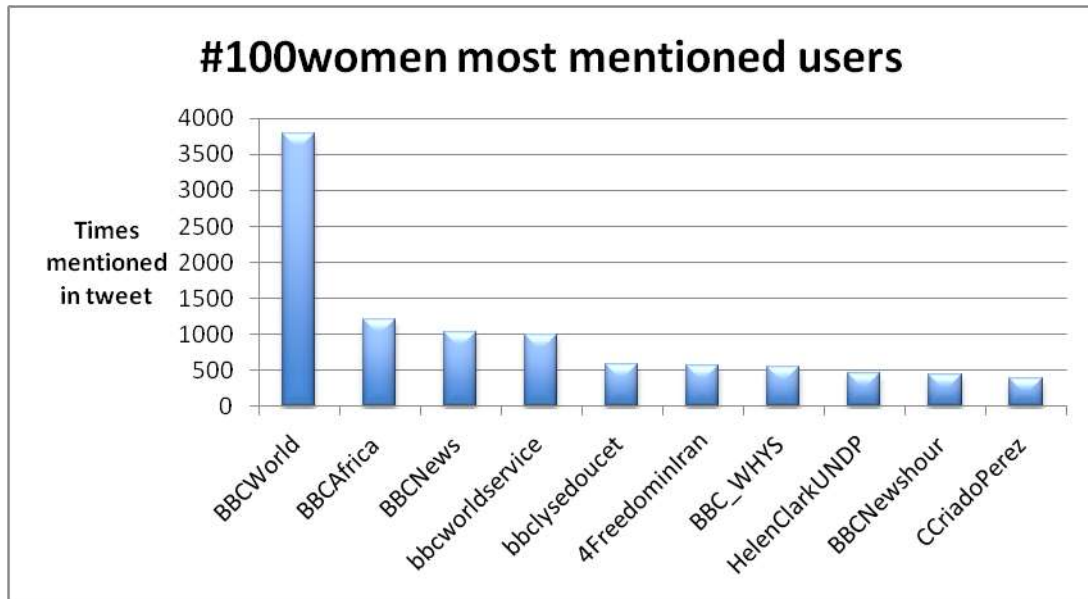


Figure 3. #100women most mentioned users. This figure lists the Twitter accounts which were most frequently mentioned in the tweets with the hashtag #100women in the period covered by the data.

In total 15 of the top 50 accounts contained ‘BBC’ in their username. When BBC journalists who have chosen not to identify their organisation affiliation in their username are added, the number of BBC related accounts is even higher.

The volume data also highlights that the BBC was successful in producing news which was relevant to different geographic or linguistic communities. In addition to BBCAfrica and BBCWorldService, shown in the graph, the top fifty most mentioned accounts also include three language services, BBCArabic, BBCBrasil (Portuguese) and BBCRussian.

The 100 Women season attracted some non-BBC accounts to join the discussion on Twitter and share content from the season with their follower communities. For example, Caroline Criado-Perez (@CCriadoPerez) is a freelance journalist, broadcaster and feminist campaigner and one of the participants in the 100 Women season. She was the 10th most frequently mentioned user.⁷ In addition, @equalitynow (Equality Now) – tweeted mentioning both @BBCWorld and @BBCNews accounts and was also one of the most mentioned and retweeted⁸ non-BBC accounts. This means that not only was Equality Now talking about the 100 Women Season but so were their followers.⁹ Another account that was using Twitter in a similar way to Equality Now, and one of the non-BBC accounts which drew the most mentions was @4freedominIran (Baraye Azadi) – The stated purpose of the account is “to bring freedom & democracy in Iran and we support 10 points plan of Mrs.

⁷ Co-founder of The Women’s Room, an organisation that campaigns for more women experts in the media.

⁸ In total it was retweeted and mentioned 45 times in our data

⁹ Equality Now, as described by its website, “is an organization that advocates for the human rights of women and girls around the world by raising international visibility of individual cases of abuse” <http://www.equalitynow.org/ourwork>

Maryam Rajavi”. This account adopted the #100women tag during the conference as a means of connecting their ongoing campaign with the BBC activity. This shows that in addition to the specific #100women content, the 100 Women Season was also valued as a vehicle for others seeking to draw attention to a similar cause.

Other particularly prominent accounts included politicians, such as 100 Women season participant Helen Clark, UNDP administrator and former Prime Minister of New Zealand, who was 8th most frequently mentioned. Slightly less mentioned was former EU High Representative for Foreign and Security Policy, Javier Solana. Although not in the top 10 most frequently mentioned users, he was particularly important in sharing the BBC’s gender gap map of the world.¹⁰ These individuals demonstrate that prominent non-BBC twitter users thought BBC content from the 100 Women Season was worth sharing. These users subsequently acted as reach multipliers for BBC content.

Retweet numbers and content:

The top three most retweeted tweets all share a link to the same BBC Article, “Women Gain as gender gap ‘narrows’”¹¹ and while the top two most frequently retweeted tweets were from BBCWorld (912 retweets) and BBCNews (348), the third is from Javier Solana¹² (281 retweets). This highlights the importance of non-BBC accounts as reach multipliers.



Figure 4. The most retweeted non-BBC's tweet

¹⁰ <http://www.bbc.co.uk/news/world-24650912>

¹¹ <http://www.bbc.co.uk/news/world-24650912>

¹² Former EU High Representative for Foreign and Security Policy

Javier Solana was acting as a reach multiplier as he was not working for the BBC and his followers were not necessarily accessing BBC content directly. While it is not possible to tell exactly how many people saw this tweet by Javier Solana, the observable behaviour of the 281 users who retweeted it, is an indication that at the very least he extended the reach of BBC content to these users. Hence, while we cannot estimate total reach accurately, user behaviour can show specific instances, such as this tweet, where non-BBC users acted as reach multipliers.

In addition, not all users who were frequently retweeted were tweeting in English. The following from Saudi academic and 100 Women season participant Madawi Al-Rasheed¹³ and BBC Arabic were retweeted 119 and 114 times respectively, and ranked as the 11th and 13th most frequently retweeted tweets. These accounts are clearly accessing a network of users that prefers Arabic, or cannot understand English, and who would otherwise not have been included.



Figure 5. Widely retweeted non-English tweets¹⁴

Madawi Al-Rasheed, Helen Clark and Javier Solana all acted as reach multipliers for the BBC. These accounts are important as they often fulfil the role of aggregator or ‘curator’, providing value for their followers by sharing and amplifying the content of other users, in this case the BBC. It would be worthwhile exploring which accounts operate in this way across a range of issues and what action could be taken by the BBC to engage more effectively with reach multipliers to deliver greater cultural value.

¹³ <http://www.bbc.co.uk/news/world-24579511>

Dr Madawi Al-Rasheed, is also member of the Middle East Center at LSE,

¹⁴ The URL and picture were unavailable at time of writing, but the picture is shown embedded in the tweet.

Accounts which engage frequently through mentions and retweets:

In contrast to the previous section looking at accounts which were frequently mentioned, this section examines accounts that often mentioned other Twitter users. We find journalists and non-BBC accounts mention and retweet others much more often than corporate BBC accounts as shown in figure 4.

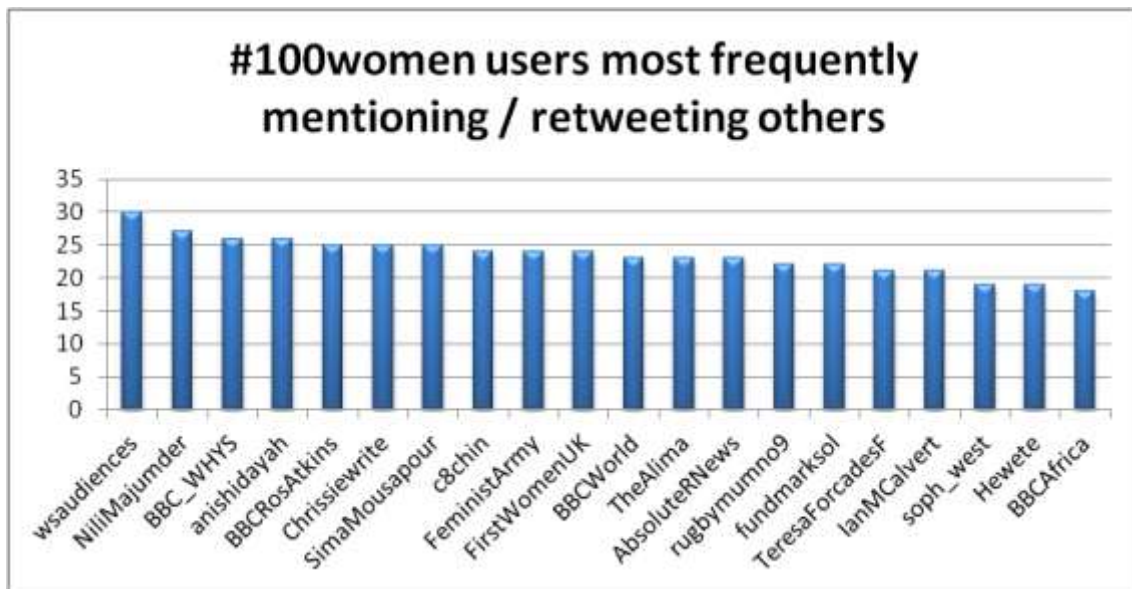


Figure 6. #100women users most frequently mentioning/retweeting others. This figure lists the Twitter accounts which retweeted or mentioned others in their tweets with the hashtag #100women most frequently in the period covered by the data. Horizontal axis lists those accounts. Vertical axis represents number of their tweets which are either retweets or mentions.

This may suggest that the corporate BBC accounts are acting more as ‘broadcasters’ of content, than as ‘curators’ of content. The BBC corporate account which appears to do the most sharing is BBC_WHYS (World Have Your Say).¹⁵ This may reflect its purpose as ‘*The news programme where you set the agenda*’- its raison d’etre is to pursue a curatorial mode of interaction with other Twitter users. An important factor to note in terms of cultural value components is that those accounts which take on a curatorial role (for #100Women mostly journalists and non-BBC users) may be more likely to promote conversation and therefore engagement likely to sustain over a period of time.

This distinction between the different roles and whether particular BBC accounts can fulfil a range of these roles is discussed further in the following section which examines the different roles ‘key actors’ fulfilled within the network sharing information and content through #100women.

¹⁵ WSAudiences actually retweeted more frequently than BBC_WHYS, but as it is an account focused on audience research, it is not included here as a corporate account.

Key Actor Analysis:

'Key actors' are the Twitter accounts which are pivotal in the flow of content through the networks of tweets and retweets. This section identifies the roles played by important accounts sharing content within the network of Twitter users for #100Women. It shows that corporate accounts tended to fulfil a different role in the network than those played by journalists. This section also highlights the opportunity for the BBC to consider a strategy which embraces a wider range of possible roles to build a more sustained conversation and cultural value around future events. This would include accounts which are charged with aggregating content driving cultural value by facilitating collaboration across different parts of the BBC.

Method

To identify key actors we used a process of plotting two network metrics - 'Betweenness' and 'PageRank' - against each other.

'Betweenness' represents how important a user is in facilitating the flow of information to specific parts of the network. Individuals fulfilling this role are often known as 'bridges' or 'gatekeepers' and are valuable as they select and tailor information to users in a specific part of the network.

Those with a high 'PageRank' score are key members of the network because other important network members interact with them. These users are heavily invested in the activity of that network, and are usually recognised as important players by other members. More detailed descriptions of these metrics and rationale for their use are discussed in Appendix 2.

The diagram below (Fig.7) helps us understand the relevance of 'Key Actor Analysis' and the significance of each Twitter account analysed:

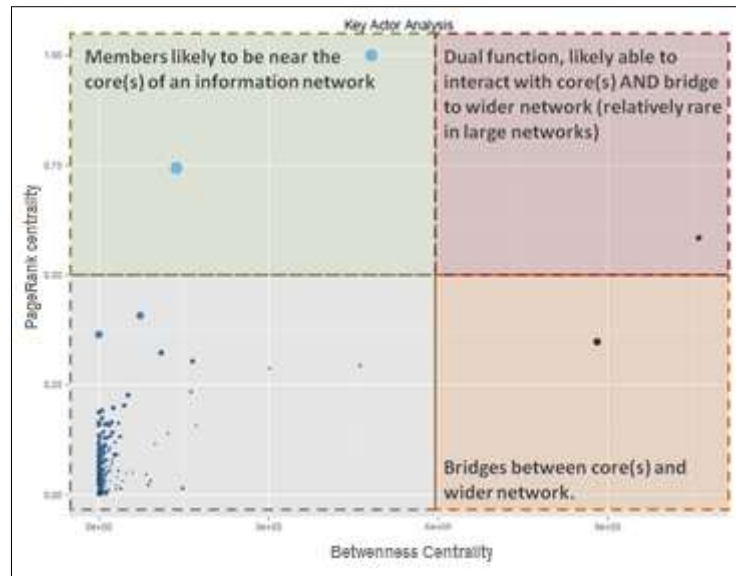


Figure 7. Key Actor Analysis Example Diagram. This figure illustrates how Key Actor Analysis Diagrams are structured on an example dataset. This is a scatterplot diagram. Each node on the diagram represents one Twitter account in the #100women network. The nodes are positioned in alignment with two axes. The horizontal axis represents their Betweenness centrality (i.e. ability to bridge communities of the network). The vertical axis represents their PageRank centrality (i.e. their relative importance in the network). The diagram is loosely partitioned into to four quadrants which represent three types of key actors (in top-left, bottom-right and top-right) and a quadrant of non-key actors (bottom left).

- Users in the bottom left quadrant tend to have no particular role and can be thought of as general users.
- Those in the top left, with high PageRank but low Betweenness, tend to be in the core (or one of the cores) of the network. This indicates they are often those most involved and are likely to provide value by providing access to privileged information. This is where we would expect BBC corporate accounts to appear. They are likely to be driving discussion and valued as trusted sources of information which others share.
- Those in the bottom right quadrant, with high Betweenness but low PageRank, fulfil the role of bridging between the core content producers and a specific community (or ‘audience’). The value of this role often comes from tailoring information and as such these users are most valuable to a specific group, but less important to everyone else. They often also share content from other sources in addition to their own tweets. This is where language service accounts or individual BBC journalists are likely to appear.
- Users in the top right, scoring highly on both metrics, are rare. They have a dual function, as they have the same trusted status as those in the top left quadrant. They also fulfil the same ‘bridge’ role as users in the bottom right quadrant, reaching areas of the network which others do not.

Comparing these metrics by plotting them against one another, allowed us in particular, to understand whether there was a difference in the role and value of BBC ‘corporate’ and ‘journalist’ accounts.

Findings:

When applied to our data on #100women, this analysis offers insights into the role and value of specific BBC accounts:

Fig. 8 shows the Key Actor Analysis for #100women. The most important accounts from the volume data have been plotted. The 45 degree line is used here as visual aid when comparing the relative position of accounts.

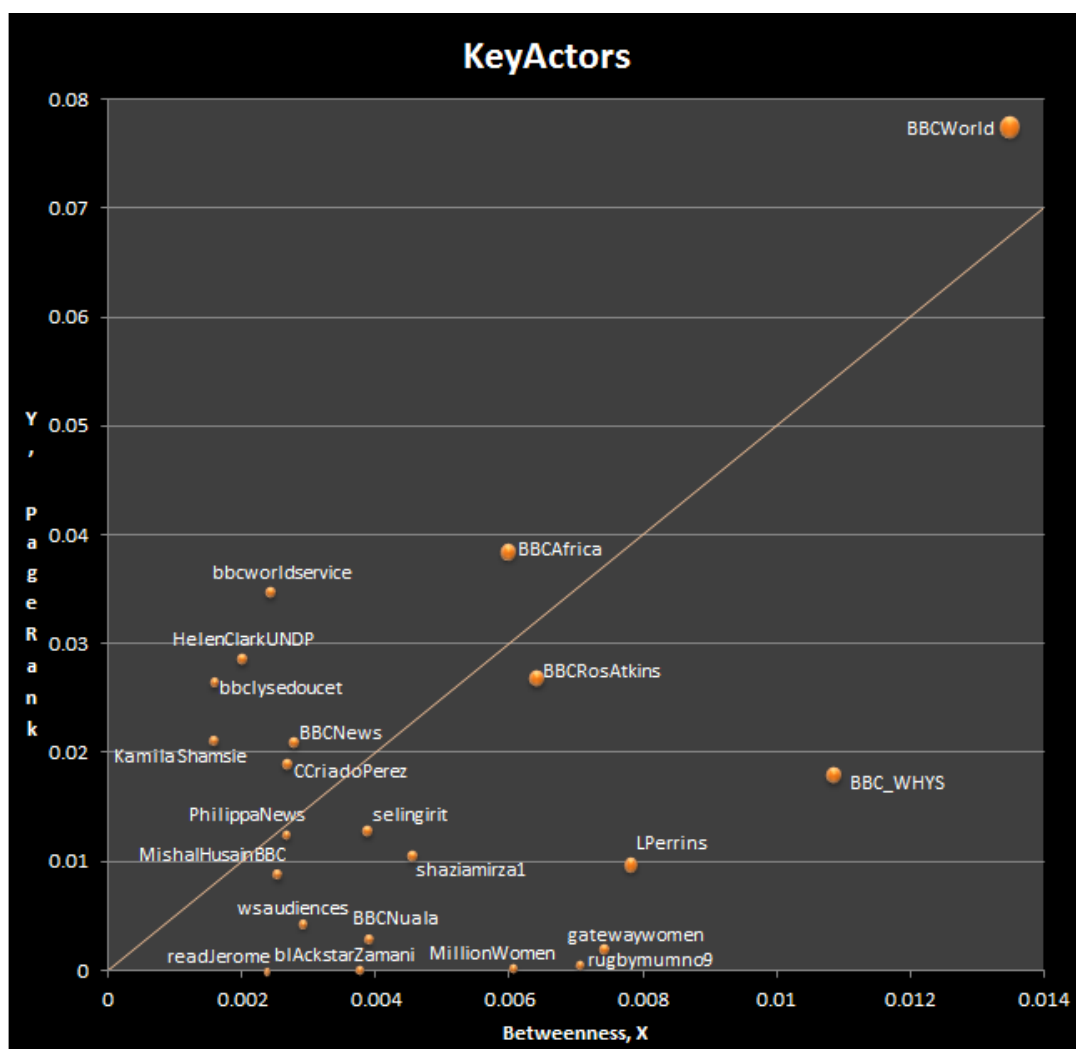


Figure 8. Key actors of #100women network. This diagram represents the key actors of #100women network in accordance with their Betweenness and PageRank metrics. The diagonal partitioning line allows us to identify the accounts which have relatively higher PageRank than Betweenness (they lay above the line) and the accounts which have relatively higher Betweenness than PageRank (they lay below the line).

Findings for specific BBC accounts:

- *BBCWorld (BBC News World Edition) can be considered the most important account for the #100women season.* It is in the rare position of appearing in the top right, scoring highly on both metrics, which indicates it lies at the core of the network **and** has the ability to reach users other BBC accounts do not.
- *BBCWorldService appears to have greater importance to the season than BBCNews,* even though BBCNews (BBC News UK edition) is retweeted more frequently. This is because the metrics indicate that other users with strong influence in the network valued content from BBCWorldService above BBCNews. They both lie within the bottom left quadrant but BBCWorldService has higher PageRank.
- *BBCRosAtkins (Ros Atkins, presenter of BBC Outside Source) was an important account for #100women season, despite his relatively small following.* This account combines relatively high scores on both metrics and, in this particular analysis Ros Atkins ranks above BBC News. Ros Atkins had around 10,800 followers (compared to the 2.4 million for BBCNews), and was retweeted less frequently than BBCNews but we believe the strong position of this account as a Key Actor is related to the mode of communication. While BBCNews, as its name suggests, disseminates BBC news content, Ros Atkins presents BBC Outside Source. This is billed as *'Real-time reports from inside BBC News on latest stories & how we're covering them. **Combining your sources and ours**'*. The importance of Ros Atkins in this analysis reflects the value users place on the opportunity to interact directly with BBC journalists, driving greater participation in BBC events. BBC_WHYS (shown in the bottom right quadrant of the graph) also has a similar bridging role to Ros Atkins.

A comparison of journalists' and corporate BBC accounts:

- BBC journalist accounts (with exception of bbclysedoucet) are lying below the 45 degree partition line, i.e. tending to deliver value by 'bridging' to, or engaging with, groups that corporate accounts find harder to reach.
- By contrast, the corporate BBC accounts (with exception of BBC_WHYS) are lying above the diagonal partition line, emphasising that corporate accounts tend to be near the core of the network, fulfilling a 'broadcast' role, and less likely to engage with harder to reach groups.

Non-BBC Accounts as Key Actors

- Two of the participants in the #100women season, the writer Kamila Shamsie (@kamilashamsie) and the Administrator of the UN Development Program, and Helen Clark (@HelenclarkUNDP), appear above the partition line indicating that they are close to the core of the network, and that other important users near the core of the network were retweeting or mentioning them. This is unsurprising as they were important participants in the 100 Women Season. However, it also highlights the opportunity for BBC Twitter accounts to make greater use of the tweets from participants in events such as #100women.
- By contrast a number of non-BBC accounts appear below the line, indicating an ability to reach fresh audiences, and a readiness to share information from other accounts. blAckstarZamani, MillionWomen, rugbymumno9, gatewaywomen are all accounts used for campaigns, in this case either defining themselves as feminists or groups advocating women's rights. The high 'betweenness' of these accounts indicates they are being retweeted by users that are not retweeting other accounts in the network and are acting as reach multipliers for BBC content. This is a similar role to that which we identified Javier Solana was fulfilling in the previous section. These reach multipliers could be engaged in future BBC events, where appropriate.

In this section the findings collectively offer evidence that an assessment of the different roles and their modes of interaction in the 'Twittersphere' will help strategic decision making to maximise cultural value. For example, journalists can bridge between communities, extending the reach and value of BBC content. In addition, the specific role of aggregating or acting as a curator of content brings with it huge advantages for some cultural value components, as shown by BBC_WHYS and Ros Atkins. The more informal connection of the WSAudiences account coming from a BBC research rather than BBC production perspective may provide another avenue to consider. This curator role tends to add value not only to the specific account, but to those other accounts from which content is aggregated and curated – BBC and non-BBC. While there are inherent risks in aggregating content from a range of sources, appropriate branding and the cultural intelligence and experience of World Service journalists could be brought to bear in the conception of more curatorial accounts, which could follow the precedent of BBC Outside Source and BBC WHYS.

The evidence for the different roles and opportunities to deliver greater cultural value is explored further in the following section on Network Analysis.

Network Analysis:

This section builds on the findings of the Volume and Key Actor Analyses. Network Analysis identifies specific groups of users, and interprets the interactions between them. It demonstrates that different BBC accounts were successful in their attempt to tailor content to different groups of users. However, it also demonstrates that the average user engaged with only one other Twitter user in the network, and in most cases that interaction represented only one retweet or mention. This shows a lack of sustained engagement and conversation (global or otherwise). As a result this analysis supports the previous findings that BBC accounts working collectively, and empowering users to engage in a genuine and sustained discussion, have the potential to generate increased and more sustained cultural value.

To investigate the size of the discussion around the #100women season we modelled the network, based on all the mentions and retweets observed in our data. The result was a network made up of 8,745 users.

Through this analysis we found that the average user engaged with only one other Twitter user in the network, and in most cases that interaction represented only one retweet or mention. This indicates that interaction around #100women was not a single large scale conversation occurring in a shared public space but many small interactions, often with only one other person.¹⁶

To understand further who interacted with whom and whether this was one single large scale conversation or a series of these small interactions, we calculated whether the network could be broken down statistically into smaller sub-networks or 'clusters'. We found 302 sub-networks, which could potentially equate to 302 different 'discussions', and subsequently calculated the number of users in each sub-network.

As shown in figure 9, only one of those 302 sub-networks had over 1,000 users (1,797). From the remaining sub-network, 25 had at least 100 users and 42 had more than 10 users. That leaves 234 sub-networks with fewer than 10 users. This confirms the earlier indication that there were a number of small interactions rather than a global conversation.

¹⁶ In metric terms the information sharing network around #100women season has a density of 0.0001373. This means about 0.01% of users that could have interacted with each other actually did.

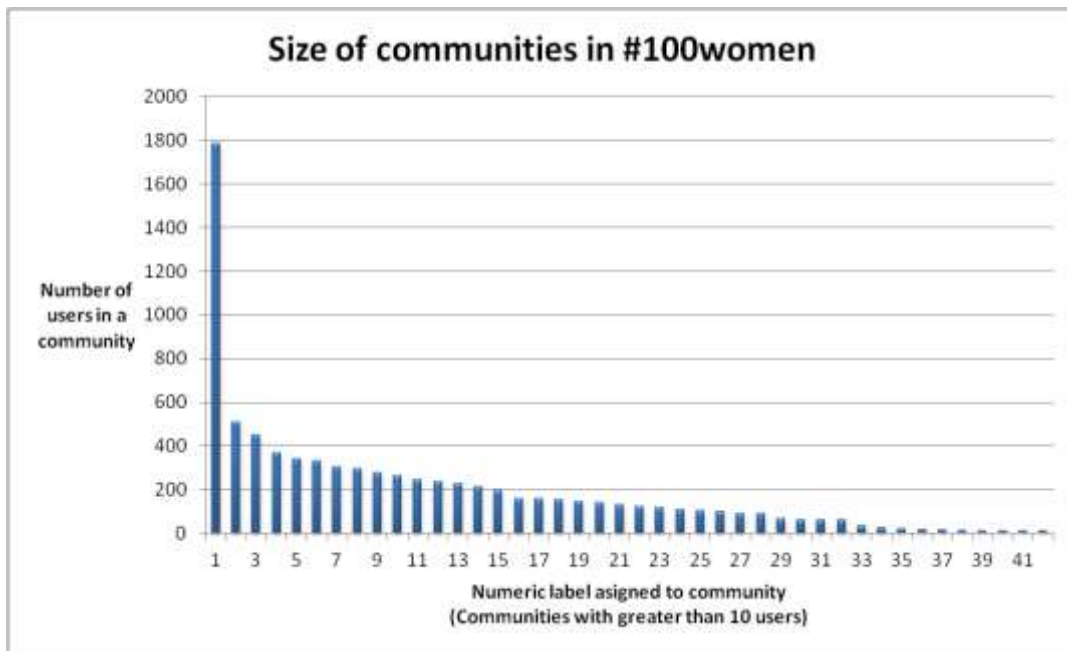


Figure 9. Size of communities in #100women network. This figure represents the sizes of statistically distinctive communities (sub-networks) which are discovered inside the #100women network. The horizontal axis represents those of the communities which have 10 or more users inside (42 out of 302 communities) sorted down by the number of their members. The vertical axis represents number of members (i.e. Twitter accounts) in those communities.

This finding, when combined with both the finding that the average user in the entire network only interacted with one other account, and the evidence from the volume analysis that some users were retweeted frequently, indicates that a number of these sub-networks orbit around only one or two prominent accounts. For example, the biggest sub-network of 1,797 users includes BBCWorld and 82% of all users that interacted with BBCWorld interacted with only with BBCWorld. This is consistent with the prominent position of BBCWorld within the #100women season, as demonstrated by the Key Actor and Volume analyses. This prominent position is visually represented in a network graph, a small section of which is shown in figure 10.

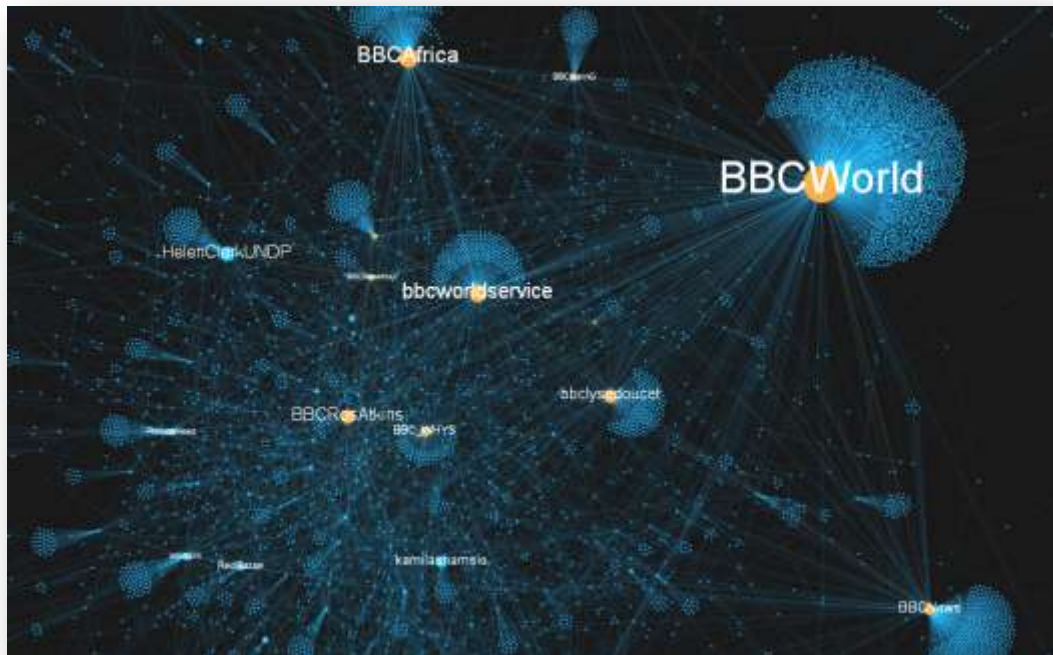


Figure 10. #100women network graph. This figure is a representation of the #100women network model. Every node (circle) of this graph represents one Twitter account. Two nodes are connected with an edge if one the respective accounts mentioned or retweeted the other respective account. The network layout facilitates visual identification of statistically distinct network communities. The biggest nodes (i.e. nodes connected to the largest number of other nodes) are labelled.

In this illustration, prominent BBC accounts are highlighted in Orange. The ‘halo’ of blue dots which appear around each of these prominent accounts represent the users that interact only with that account. The few links (lines) which can be observed represent situations where prominent accounts have retweeted each other or, where users have retweeted more than one account.

This visually demonstrates the earlier finding there are lots of small pockets of interaction rather than a large scale discussion. While this shows the season did not develop into broad discussions, on a positive note it also shows that the BBC was able to provide news which was locally resonant in many areas of the Twittersphere. The tailoring of content to particular communities resulted in the small groups orbiting around a specific BBC account.

As our analysis has shown accounts play different roles in the ‘Twittersphere’ we then used Cluster Concentration Analysis to compare sub-networks which have a BBC account as the most prominent account, and those where the prominent account is a non-BBC user. This analysis produced an assessment of the potential value of the BBC adopting different modes of interaction.

Cluster Concentration Analysis:

The key finding in this section is that the sub-networks in which a BBC account is prominent do not involve as much discussion as those where a non-BBC account is prominent. This demonstrates that there are modes of interaction which extend reach and those which foster greater engagement, i.e. greater levels of discussion. This again highlights the opportunity to enhance the cultural value of BBC seasons such as 100 Women, by offering audiences a range of social media accounts which adopt different roles and modes of interaction.

The first part of this analysis focuses on the users with which BBC accounts interacted. We focused on the four most prominent BBC corporate accounts identified in the volume and key actor analyses; BBCWorld, BBCAfrica, BBCWorldService and BBCNews.

Of the users that were retweeted or mentioned by at least one these four accounts, 70.6% had a username which contained 'BBC'. Twitter accounts that were mentioned or retweeted by three of the four accounts above included BBClysedouchet, BBCRosAtkins, and BBCWorldService, while MishalHusainBBC and BBCKarinG were mentioned by two of the four accounts. This demonstrates that the prominent BBC accounts focused on retweeting BBC content, for example, BBCWorld mentioned or retweeted eleven other accounts, all of which were BBC.

The key finding from this part of the analysis is that the 4 prominent BBC corporate accounts we investigated were primarily amplifying content from other BBC Twitter accounts. Therefore where BBC accounts did act collectively they were almost entirely adopting a 'broadcast' mode of interaction. This, as previous analysis has also demonstrated, did not foster a lasting engagement through the facilitation of discussion between non-BBC users. In effect, rather than empowering users to share content as the season intended, this 'broadcast' approach was more likely to drown out non-BBC users, ironically including those who were participants in the 100 Women conference.

In an environment where there are numerous accounts adopting a 'broadcast' approach to Twitter, accounts which act as aggregators or curators of content, or that focus on facilitating discussion, can succeed in generating particularly high cultural value by offering alternative modes of interaction. Rather than the more traditional broadcaster / audience relationship, where there is a content producer and a recipient, sub-networks that contain a user curating content are likely to have accounts that are 'equally engaged' in producing and receiving content. Furthermore, in sub-networks containing a curator there is less likely to be a single dominant node as there would be in the 'broadcast' mode of interaction.

To test whether users in a sub-network were 'equally engaged', we identified the total number of times the users in that sub-network had been retweeted or mentioned in our

#100women data. In each sub-network the most prominent user was identified, meaning the user who had been mentioned or retweeted the most. Subsequently, the percentage of the total retweets and mentions that this most prominent user accounted for within this sub-network was calculated, the resulting 'concentration ratios' are shown in figure 11.

We found that for many sub-networks were dominated by BBC accounts. For example in those sub-networks which contain BBCWorld, BBCNews, BBCWorldService and BBCArabic, the prominent BBC account dominated, in the sense that a single BBC account accounted for a large proportion of the retweets and mentions. By contrast BBC_WHYS does not dominate its sub-network, as it accounts for only 40% of interactions. **This is because, as noted in other findings, it has a more facilitative approach which aggregates or shares the views of others. This highlights the potential for accounts which take this approach to empower users to share content, or foster sustained engagement with an issue.**

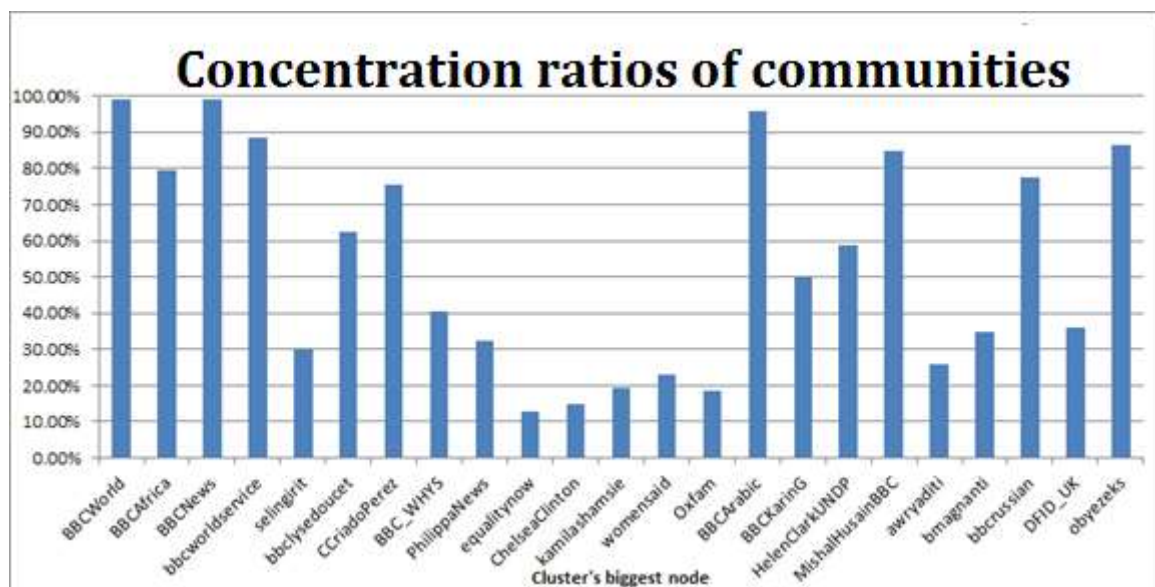


Figure 11. Concentration ratios of communities. This figure represents concentration ratios (CR) of retweets and mentions for the largest statistically distinctive communities of the #100women network. The horizontal axis lists those communities and represents names of their biggest Twitter users (i.e. users who have the biggest number of retweets or mentions among their community in the #100women network). The vertical axis represents CR of those communities.

Where the most prominent account in a sub-network was **not** a BBC account, that sub-network was less likely to be dominated by that single account. In these instances there are generally higher levels of interaction and clusters tend to have greater levels of exchange. For example, in the sub-networks where Womensaid, Oxfam or Equalitynow are the biggest nodes, they account for less than 25% of the total interaction, compared to over 90% for networks dominated by BBCWorld and BBCNews for example. This means that there must be other accounts contributing to a discussion or sharing content to account for the other 75% of interactions. That these sub-networks exist around events organised by the BBC indicates the opportunity for some BBC accounts to adopt a similar mode of communication and facilitate discussions, while other BBC accounts focus on 'broadcasting' content.

Conclusions:

By applying various modes of analysis to the data on Twitter conversations around #100women, we have identified several distinct findings. Many of these findings show the BBC part way along the journey from traditional broadcaster into a more socially mediated age of news consumption.

- It is clear that for seasons such as 100 women, the BBC is able to attract the interest of a wide range of Twitter users, but as shown in this case, that interest can be short lived.
- Equally the BBC was able to produce content which others wanted to pass on, but was much less successful at empowering others to share content or join a large scale discussion, or a 'global conversation'.
- The BBC, particularly the World Service, was able to make content that was locally relevant, but many of the Twitter communities they reached remained isolated from one another. As a result, **few discussions transcended pre-existing boundaries, be they based on national, ethnic and religious boundaries, or habits formed in news consumption.**

When we consider what these findings mean for the World Service, and the wider BBC, we can identify a number of opportunities to increase the cultural value generated by future seasons or conferences.

The most important of finding is the opportunity to develop a strategy which includes social media accounts mandated to adopt a broad range of roles and modes of interaction within a 'twittersphere' around a news event.

Such a move to a more socially mediated approach to news production is not without risk specifically to the pre-existing values of trust and quality. Indeed, there may be a tension or trade-off between priorities for different accounts. However, this tension is already an inevitable result of the desire to facilitate a 'global conversation' on Twitter (extending participation value), and the need to protect elements of the BBC and BBC World Service brand. For example, these tensions are evident on the 100 Women webpage itself, where the language used discourages active engagement in favour of passive following, while simultaneously also encouraging users to 'join in'. As one heading ambiguously reads; *'Follow the season via [#100Women](#) to join in the conversation'*.

In drawing these conclusions, we acknowledge the influence user expectations have on the dynamics of any relationship between the BBC and Twitter users. Many users approach BBC corporate Twitter accounts such as BBCNews anticipating the account will act as a

broadcaster would in any other media. They expect high trust, reach, quality and professional values. They currently do not expect these 'broadcast' accounts to be acting as curators of content, or facilitators of a conversation which would deliver higher engagement and participation value. Thus any shift in emphasis across the slate of BBC Twitter accounts will need to address user expectations, and strike a balance between content production and content curation.

Recommendations for Further Research:

- *In preparation for future events, research could focus on identifying communities or networks of Twitter users with which to engage.*

In contrast to breaking news events, when the BBC plans seasons there is potential for greater research to identify pre-existing communities focused around an issue, and understand their current modes of interaction. **This information could be used during the event to extend both reach and engagement, by drawing the discussions of those existing communities into a BBC season, rather than attempting to build discussions from a standing start.**

- *A greater focus on the contributors to events, may also enhance the engagement, participation and cosmopolitan values of BBC accounts.*

Further research could investigate whether this opportunity exists across other seasons. That research could examine, for example, whether by harnessing the influence of contributors on social media networks and using the BBCs own networks to assist them the BBC could generate greater cultural value.

- *Finally, when preparing events, it may also be valuable to consider opportunities for engaging with other broadcasters via social media.*

Research could test whether this type of engagement between news organisations already occurs and in what circumstances. Although counterintuitive, this has on occasion happened, for example RT (formerly Russia Today) used information from Al Arabiya in the aftermath of the chemical weapons strike in Syria. News organisations routinely take content from AP or Reuters. While in the case of the 100 Women season the content producers were campaigners and journalists rather than news organisations, the analysis has suggested that when used appropriately interaction with other content producers could be of great value to the BBC as they have the potential to alter the role and status of BBC accounts within the network of news consumers. For example, in metrics terms, it could increase the number of key

actors with which the BBC engages and thereby increase both reach and authority of BBC accounts

Appendix 1:

Roles within networks, and their potential values

In our suggestions for further research we identified that strategies for maximising cultural value based on developing specific roles within the network and sub-networks may be useful. To that end we have teased out the different roles seen in the 100 Women Twitter networks. We believe these roles would fit with BBC editorial guidelines for using blogs and microblogs, which in part states;

It may not be enough to write on your BBC microblog's biography page that "retweeting" does not signify endorsement, particularly if the views expressed are about politics or a matter of controversial public policy. Instead you should consider adding your own comment to the "tweet" you have selected, making it clear why you are forwarding it and where you are speaking in your own voice and where you are quoting someone else's.¹⁷

The Broadcaster:

Core accounts focusing on producing original tweets, retweeting / amplifying other BBC accounts. The primary value of this role is maximising reach, and of disseminating content that emphasises the core cultural values of the BBC – trust, reliability etc. Because of this content must be tightly managed.

The Bridge:

These accounts seek to reach specific groups ('audiences') either through translation or tailoring of content to the specific tone or interest. These Bridge accounts may already have an existing relationship with the specific community. Their value is from the ability to reach and engage specific groups not reached by the broadcaster accounts.

The Curator:

Accounts responsible for aggregating and filtering content to produce a rich and diverse stream.

- A conservative approach to the role of curator draws external content into a BBC broadcast, thus maintaining high levels of control and protection of core BBC cultural values. Examples include the journalist account BCRosAtkins, or the corporate

¹⁷ Blogs and Microblogs, Social Networking, Microblogs and other Third Party Websites: BBC Use Guidance in Full, <http://www.bbc.co.uk/guidelines/editorialguidelines/page/guidance-blogs-bbc-full#blogs-and-microblogs>

accounts BBC_WHYS or BBC Outside Source, that function to gather content to shape the agenda for a specific news program

- A social approach to the role of curator is more ambitious. It would use the expertise of BBC journalists to aggregate content, embedding the BBC within a culture of 'social search' (finding news through trusted relationships and connections), and drawing on the insight and expertise of many individuals and organisations on Twitter. These users have the potential to enrich the BBC broadcast approach, and to also act as conduits which may extend the BBC's reach. This social approach to the curator role would need clear branding and attentive management but the rewards are high cultural value in terms of participation and engagement, and also for the journalists themselves in terms of understanding their audience and accessing new sources of content for their own reporting.

The Broker:

Broker accounts also create value by accessing hard to reach groups. However, the Broker role is fulfilled by non-BBC accounts retweeting BBC content to their pre-existing network. That content must have a value both to the Broker themselves, and to their network. Potential Brokers could be given early warning, or actively made aware of content which may be of interest. This approach is likely to be most effective where potential Brokers are more invested in an issue than the BBC, and where they are not 'crowded out' by the BBC acting as Broadcaster.

The Facilitator:

A facilitative BBC account would provide access to larger audiences for non-BBC accounts that have strong content but a small number of followers. This is a contemporary re-imagining of one of the initial functions of the BBC World Service. In the #100women season BBCWorld amplified other BBC accounts, but not tweets from the 100 Women themselves. It can be assumed the 100 Women had things to say which were worth hearing and BBCWorld, BBCNews, and BBCAfrica had large networks of engaged users receptive to new content. Cultural value could have been enhanced for all parties by facilitating the connection between these users and networks. If a greater level of active empowerment of users is desired, then facilitation offers high returns in cultural value for moderate investment.

Appendix 2:

Metrics for Key Actor Analysis:

Key actor analysis uses a scatter plot of two related metrics of network centrality to identify members of the network that rank highly on both metrics, and those outliers that rank highly on one metric but not the other. This builds on the work by Thomas Valente et al. (2008) and Drew Conway (2012)

Plotting measures against each other reveals the different positions. The work by Drew Conway suggests plotting Betweenness against Eigenvector measures of centrality, although for reasons described below we ultimately plotted Betweenness against Pagerank (a concept related to Eigenvector). The reason for using these measures is that they measure different types of importance within a network. Valente et al. (2009) describe the difference between these roles;

'Betweenness centrality measures the extent to which an actor lies between other actors on their geodesics. Actors high on betweenness centrality, therefore, have the potential to influence others near them in a network ([Friedkin, 1991](#)), seemingly through both direct and indirect pathways. A node with high betweenness centrality can potentially influence the spread of information through the network, by facilitating, hindering, or even altering the communication between others ([Freeman, 1979](#); [Newman, 2003](#)). Similarly, those high on eigenvector centrality are linked to well-connected actors and so may influence many others in the network either directly or indirectly through their connections'.

The Key Actor Analysis is based on an expectation of a correlation between network metrics. Valente et al. (2008) concluded their work comparing the correlation between network metrics across nine previous network analyses by saying that; *"The level of correlation among measures seems nearly optimal - too high a correlation would indicate redundancy and too low, an indication that the variables measured different things"*. Although the 2008 study did not include PageRank, it did include the related measure of Eigenvector centrality.

The original suggestion by Drew Conway was to use Eigenvector for the Key Actor Analysis; however, we suggest PageRank would be a viable alternative. This is because of concerns about Eigenvector in directed graphs with low density. To balance this concern with the perspective which Eigenvector provides, PageRank has the potential advantage of including 'random jumps' – also referred to as damping factor. The damping factor for the analysis

could set at (0.85 / 15%). This damping factor was selected as it was the level suggested in Brin and Page (1998) and also highlighted by Becchetti and Castillo (2006) who observed in their analysis of PageRank that the “typical damping factor used in practice is between 0.85 and 0.90”.