SOCIAL TV: QUANTIFYING THE INTERSECTIONS BETWEEN TELEVISION AND SOCIAL MEDIA (PANEL)

Panel Overview

Past years have seen a rapid growth in the uses of social media alongside conventional broadcast media such as radio and television. Television shows and networks have increasingly incorporated social media into their programming, for example by promoting the use of *Twitter* hashtags to channel user interaction with televised content and by showing a selection of incoming hashtagged tweets during live shows; by establishing dedicated *Facebook* fan pages and *Twitter* accounts for shows, presenters, or even fictional characters; or by providing their own bespoke social networks and apps such as *Fango* and *Zeebox*, which themselves often offer some degree of interconnection with mainstream social media platforms (Harrington, Highfield and Bruns, 2012). Collectively, such initiatives have become known as "social TV".

In addition to such opportunities for direct engagement between audiences and broadcasters, initiatives aiming to track and measure the success or otherwise of social TV, and to thereby quantify the impact that social media activities around shows may have on their ratings or other performance indicators, have also begun to emerge, driven both by scholarly research projects and by commercial organisations (see e.g. Nielsen, 2012; 2013). Current frameworks for such a quantification of the intersections between television and social media remain in their infancy, however, and are often highly particular to specific shows, content types, or national broadcast systems. Further, their underlying analytical assumptions and research methodologies are often poorly documented and insufficiently tested – especially where such social TV metrics are offered as commercial products.

This panel brings together a number of key social TV researchers in order to explore the current state of the art in the field and chart the path ahead for scholarly research. Papers presented in this panel (outlined in detail below) will define a new methodological approach to establishing reliable "telemetrics" for social media engagement with television; explore the expectations of television producers and the response by viewers in the context of a specific social TV project on Australian television; map the overlapping footprints of selected television programmes within the overall network of a national Twittersphere; and [... fourth paper...]. These contributions will document a number of complementary research approaches which in combination serve to outline pathways towards the further development of reliable social TV metrics.

Harrington, S., Highfield, T., & Bruns, A. (2012). More than a Backchannel: Twitter and Television. In J. M. Noguera (Ed.), *Audience Interactivity and Participation* (pp. 13–17). Brussels: COST Action Transforming Audiences, Transforming Societies. Retrieved from http://www.cost-transforming- audiences.eu/system/files/essays-and-interview-essays-18-06-12.pdf

Nielsen. (2013). New Study Confirms Correlation between Twitter and TV Ratings. *Nielsen Press Room* 20 Mar. 2013. Retrieved from http://www.nielsen.com/us/en/press-room/2013/new-study-confirms-correlation- between-twitter-and-tv-ratings.html

Nielsen. (2012.) "Nielsen and Twitter Establish Social TV Rating. *Nielsen Press Room* 17 Dec. 2012. Retrieved from http://www.nielsen.com/us/en/press-room/2012/nielsen-and-twitter-establish-social-tv-rating.html

Introducing Telemetrics: The Weighted Tweet Index

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Abstract

This paper introduces a new methodology for analyzing and measuring engagement with television content by users of Twitter. Drawing on factors such as the network, viewing audience, and date of broadcast to establish a baseline expectation for volume of tweets around a television show, and applying techniques from the field of sabermetrics to create neutral volume figures ('weighted tweets') which exclude these variables, our metrics provide new insights into television's social media presence. The methodology provides a variety of new measures for analysing the social media strategies of individual television programs, channels and networks, for comparing users' engagement with programs, channels or networks, and for predicting future volumes of tweets.

Introduction - Measuring 'Social Television'

There has recently been an increase in the levels of both academic and industry attention paid to 'social television' – broadly defined as the extension of 'offline' audience engagement into social media platforms (Harrington et al, 2012; Highfield et al, 2013; Wohn & Na, 2011). However, comprehensive, data-driven techniques to track and measure social TV activity are still emergent, and have to date been almost exclusively the provenance of commercial media organisations, preventing external testing or validation of the data by researchers interested in the space, despite their growing impact on commercial decisions and business models in the digital media environment (Proulx & Shepatin, 2012). For different stakeholders, measures of the 'success' of social TV vary. Advertisers and agencies are focused on measuring the retention of commercials shown during a broadcast. Channel operators and networks look for measures of the impact of social media activity on a program's ratings, and compare the relative visibility and resonance of shows within social media communities.

Television producers – and academics – are often interested not only in the volume of discussion, but also its content.

Inspired by the field of Sabermetrics (see, for example, James (2003)), and more generally the statistical analysis of sporting events, the project on which this paper is based builds on our significant existing database of activity around Australian and international television in order to develop advanced metrics for measuring Twitter activity, and for making such activity comparable across time, genre, network and location.

Biased Metrics

Analysts of sports statistics have, over time, sought to develop methods to separate out those factors which lead to the result of a sporting event from other, more circumstantial factors. For example, in Baseball, traditional statistics such as Earned Run Average (ERA) were used to measure the performance of pitchers. However, the work of sabermetricians has shown that the quality of the fielders behind a pitcher plays a much larger role than was quantified by ERA, and thus they developed a set of new statistics such as FIP (Fielder Independent Pitching), to better quantify the individual performance of a pitcher.

Analogous to the way a pitcher's personal ERA metrics are biased by the quality of the team they pitch for, the Nielsen SocialGuide social TV metrics for individual shows are biased by a number of similar circumstantial factors, such as the broadcast footprint of the TV network the show was screened on, as well as the time and date of the broadcast. A show on one of the major national networks in the United States will almost inevitably receive greater social media attention than one on an obscure regional cable channel, and a show in prime-time will usually generate more conversations than one broadcast in a late-night slot. Like the quality of a pitcher's team in baseball, such biases are relatively stable and can be accounted for in the development of more sophisticated metrics such as those we outline in this conference paper.

The Weighted Tweet Index

During 2012 and 2013, SocialGuide – which was purchased by Nielsen in November 2012 – published daily reports providing statistics on Twitter conversations for the 'top ten daily shows' in the United States. The 'top ten' was initially determined by the volume of tweets but subsequently changed to reflect a show's 'total impressions' – i.e. Nielsen's estimate of the number of people who might have viewed a tweet about the show. As a result of previous research projects, we have also gathered significant audience data and Twitter activity around Australian and international television dating back to 2011. Our own data was captured via internal tools from the Twitter API in the case of tweets, and scraped from the web in the case of television ratings. With these sources of data, we began to isolate the significance of factors which may influence the number of tweets a show receives on Twitter.

Much as the FIP statistic in baseball seeks to compare pitchers' statistics on a like-for-like basis – that is, adjusted as if each pitcher was playing with the same average-

quality team of fielders – our work seeks to generate reliable metrics for social TV independent of factors such as the network or the time and date it was screened or viewed. By normalizing the social media engagement data in the Weighted Tweet Index, we are able to measure a show's 'performance' in a way that enables us to evaluate a producer's, channel's or network's social media strategy, as well as to assess the 'social' claim of social TV – that is, to measure audience engagement with a television program through conversations on Twitter.

Predicting the Future?

The utility of this method is not limited to analysis of past events. It enables us to identify a baseline by which to measure the future performance of shows. Because our 'Weighted Tweets' values have been stripped of much of their extraneous context, we can aggregate these values across a range of episodes from a given series for which we have tweet volumes and ratings data, and apply to this the factors that describe the circumstances (for example: network, date and time) of the next broadcast. In doing so, we seek to predict the volume of tweets that the next episode should expect to receive when it airs, which may serve as both a prediction and a barometer of the social TV 'success' of a particular episode. As we refine our model, and apply it to a greater number of shows, we will gain a better understanding of the significance of each factor on the number of tweets recorded by a particular show.

Conclusion

Internet Research 15.0, 2014: Bangkok, Thailand
By breaking raw tweet numbers into their component parts, we are able both to generate measures of Twitter users' engagement with past shows and, potentially, to establish whether future ones generate the attention on Twitter that may have been expected. All else remaining equal, any discrepancies between the prediction and the actual result should then be due to factors internal to the show itself, and most centrally to the one factor which we cannot account for: content, for which variations are often unforeseeable and thus cannot be accounted for ahead of time.
However, our predictions of what volume of social media engagement a show should expect to receive are even more significant in such cases, as they constitute a barometer of success for networks, producers and social media strategists, and provide both industry and researchers with a list of shows which either exceeded or failed to reach their predicted levels. This allows the benchmarking of new episodes against their intended engagement targets, and allows for an analysis of what factors contributed to the number of tweets generated around a particular episode or series on social media.

References

Bruns, A., & Liang, E. Y. (2012). Tools and Methods for Capturing Twitter Data during Natural Disasters. *First Monday*, *17*(4). Retrieved from http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/3937/3193

Bruns, A., & Stieglitz, S. (2013). Towards More Systematic Twitter Analysis: Metrics for Tweeting Activities. *International Journal of Social Research Methodology*, *16*(2), 91–108. doi:10.1080/13645579.2012.756095

Harrington, S., Highfield, T., & Bruns, A. (2012). More than a backchannel: Twitter and television. *Audience interactivity and participation. Brussels: COST Action Transforming Audiences, Transforming Societies*, 13-17

Highfield, T., Harrington, S., & Bruns, A. (2013). Twitter as a technology for audiencing and fandom: The# Eurovision phenomenon. *Information, Communication & Society*, *16*(3), 315-339.

James, B. (2003). *The New Bill James Historical Baseball Abstract*. Free Press, New York, NY, USA, 2003 Proulx, M., & Shepatin, S. (2012). *Social TV: how marketers can reach and engage audiences by connecting television to the web, social media, and mobile*. John Wiley & Sons. Tango, T. (n.d.). Defensive Responsibility Spectrum (DRS): Breaking up the fielders from the pitchers. Retrieved from http://www.tangotiger.net/drspectrum.html

Wohn, D., & Na, E. (2011). Tweeting about TV: Sharing television viewing experiences via social media
message streams. *First Monday, 16*(3). doi:10.5210/fm.v16i3.3368

Acknowledgments

License

Public Service Media and Social TV: Co-Creating Television Comedy with the Network Influencers of the ABC's *#7DaysLater*

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Abstract

In many instances of broadcast television production, the use of social TV is most obvious during the transmission of the program itself where the audience might participate by commenting on the program, engaging in collaborative activites or 'gossiping' about their favourtite characters for example. The Australian Broacasting Corporation (ABC) has long been experimenting with social TV through many of its programs, with its greatest success in its flagship current affairs television program, *Q&A*. Recently, the ABC sought to extend this experiment beyond the banal activites of lounge-room heckling and invited the audience to take an active role in the conception, development and production of the 10-minute television program, *#7DaysLater.* Using a quantitative data scraping approach to the program's social media interactions along with ethnographic qualitative data, this paper critically examines the co-creative production model with input from the the lead *Twitter* participants, or 'network influencers'.

Social TV in the Context of Public Service Media

Audience contributions to social TV, referred to as 'back channel communication', are often limited to Tweets or Facebook comments selected and displayed on the strapline during live broadcasts. However, some broadcasters have moved to more exploratory models that incorporate the 'back channel' into the production process itself, positioning the audience not in the lounge chair but in the producer's chair. This is a complex undertaking, with the Australian Broadcasting Corporation (ABC) seeking to integrate audience contributions into the organisation's production and editorial standards while maintaining the enthusiasm of contributors. Moreover, collaborative production through social TV within public service media (PSM) problematises its public service remit, prompting an exploration of how to facilitate collaborative, social TV programming that encourages audience contribution while generating public value.

PSM has its roots in the Reithian values, which often suggests the organisation should inform, educate and entertain its audience (Debrett, 2010). The purpose of PSM can however be extended to include distance from vested interests, the fostering of national culture, education of the public, "quality programming standards, programme maker independence" (Cunningham, 2013, p. 62) and the capacity to provide voice to marginalised groups and individuals. The incorporation of information and communication technologies to enable audience participation within the production process of PSM content has provided multiple benefits including audience specific content production, improved audience investment within the broadcaster's programming, and the ability to satisfy the PSM remit to include what might be otherwise marginalised voices. Simultaneously, social media tools and platforms problematise the production process as often the ideas and contributions from the

audience are non-compliant with the regulatory framework that PSM operates within. For example, the ABC is governed by its Editorial Policies to ensure the institution complies with the legislative requirements of the corporation's charter, specifically " broadcasting programs that contribute to a sense of national identity and inform and entertain, and reflect the cultural diversity of, the Australian community; and broadcasting programs of an educational nature" (ABC Act, 1983). However, audience contributions rarely acknowledge these nation and culture building frameworks of PSM and contribute material that, although creative and entertaining, may not satisfy the editorial requirements of the ABC. The misalignment between broadcaster and participating audience member gives rise to the problem of how to facilitate the collaborative production of ABC-appropriate content from a diverse group of contributing individuals.

I have previously argued the case for cultural intermediation (Hutchinson, 2013), which is described as the combination of human and non-human actors to negotiate the production of cultural artefacts. Cultural intermediation enables the production of co-creative content between institutional online communities and professional content producers while operating within the regulatory constraints of PSM. This paper builds on that work by critically examining the engagement of the ABC and social TV through *#7DaysLater*, a program "...taking comedy to the scary arena of interactive storytelling where the audience gets to write the brief via social media for each weekly episode that will air just seven days later on ABC2" (ABC, 2013). By engaging in a narrative-based approach where actors deliver a scripted performance during the program, *#7DaysLater* called on its audience to collaborate, conceive, develop, write and co-produce a 10-minute television program that was broadcast within 7 days of the call-out. The program included a host of national and international celebrities as both actors and producers who collaborated with its audience, attracting global online participation.

Identifying and Understanding the Network Influencers

The research presented in this paper engaged a mixed methods approach, incorporating both quantitative and qualitative data. The research design used quantitative data to highlight where to concentrate the qualitative research efforts, in this case ethnographical research with not only the *ABC* staff but also the audience members. Identifying the significant individuals who were engaging in co- creative activity across Twitter enabled the research to focus on extracting relevant qualitative data. Twitter data highlighted potential interviewees and participants for the second phase of research: interviews with the *#7DaysLater* production team and the networked communication leaders.

Tweets were collected during the program's season and a few weeks beyond the final broadcast, from 3 November to 28 December 2013. A total of 903 tweets were captured during this time. The data were cleaned through *Google Refine* and imported into the open source social network analysis program, *Gephi*. Within *Gephi* it is possible to highlight the significant nodes in the network, their connectedness and how influential they are within the network.

The first phase of the research was the quantitative social network analysis, where tweets were collected with the *#7DaysLater* hashtag. The data was processed through network analysis algorithms within *Gephi* which enabled the analyst to understand not only who was in the network, but how directly related they were to the conversation, how connected they were to others, how influential they were and most importantly for this research who the communication leaders were. The communication leaders are referred to as network influencers from here on. *Figure 1* visualises the *#7DaysLater* network through the @users and hashtag conversation topics, which represents how a user is connected to both topics and other users. For example if @userA mentions #topicX to @userB, the other information within the tweet is discarded to represent only the two users and the subject of their conversation. Further, if @userC retweets #topicX to their network, we can see how that topic travelled across additional communication networks. In other words *Figure 1* represents who is saying what to whom. Node size indicates how many times an item is mentioned, with 172 topics being discussed. The larger nodes are more active users or more talked about topics. Betweenness centrality metrics revealed the network influencers: the green nodes are the most influential users and the pink nodes indicate the most talked about topics. Betweenness centrality is a useful measure to employ in this analysis, instead of connectivity, as it not only indicates the load of the node within the network but also its importance. Betweenness centrality then indicates not only how many times a topic or user is referred to, but also how significant it is within the network, where "a point in a communication network is central to the extent that it falls in the shortest path between pairs of other points" (Freeman, 1977, p. 35), and thus the control of information flow through the network. Processing the data through a modularity analysis highlights 48 communities within the network, where colours indicate connectedness. An example of the connectedness of the network influencers is *@Daley_Pearson,* the *#7DaysLater* director, having a large purple connected community, whereas *@tokyostuntbear*, one of the professional directorial contributors has a reasonably connected brown network.
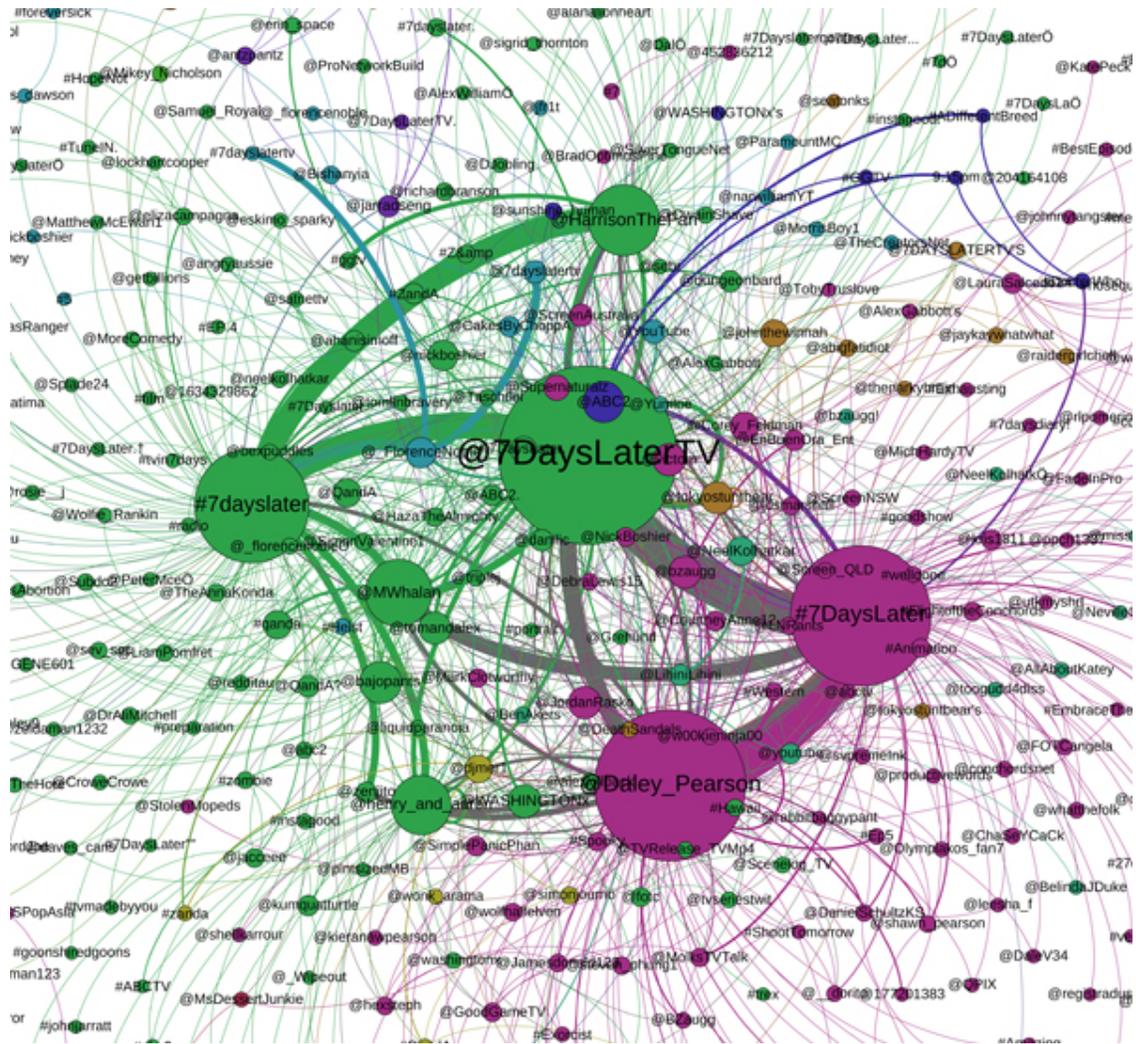
Figure 1 The #7DaysLater Twitter network

The preliminary quantitative analysis established the following top ten users:

1. @7DaysLaterTV
2. @Daley_Pearson
3. @HarrisonTheFan
4. @MWhalan
5. @henry_and_aaron
6. @bajopants
7. @ABC2
8. @WASHINGTONx
9. @JordanRasko
10. @tomandalex

The analysis also reveals the top ten topics talked about were:
1. #7DaysLater
2. #qanda
3. #ZandA
4. #spooky

5. #Animation
6. #FlightoftheConchords
7. #Western
8. #Hawaii
9. #ggtv
10. #zombie

If we eliminate all of the ABC staff Twitter handles (@7DaysLaterTV, @Daley_Pearson, @bajopants, @ABC2, @JordanRasko and @tomandalex) along with celebrities and external production professionals (@henry_and_aaron, and Washingtonx), @HarrisonTheFan and @MWhalan are the top two network influencers. To enable a sizeable sample of contributors to investigate, @zenjito, @jarradseng and @Mikey_Nicholson were also included. From the highest engaged topics, it is also clear that Episode 3, *Zombies Flight for Equality* (#ZandA) and Episode 5, *A Bullet with Braille on It*, were the most engaged episodes of the season – a fact confirmed during the interview with Supervising Producer, Richard Huddleston. This quantitative analysis provides the basis for the highly focussed qualitative research: interviews with the *#7DaysLater* team and the most influential Twitter contributors.

The PSM Co-Creative Production Model That Includes Social TV

On the surface, it would appear that the most engaged contributors to #7DaysLater via Twitter are the professional staff working on the program, closely followed by groups or individuals who are part of external production houses. This result is expected, however it is the non-aligned network influencers that are of most interest. For example @HarrisonTheFan (Figure 2) and @Mikey_Nicholson are aspiring media professionals who may have contributed to the program as an avenue of demonstrating their creative talents, while it is likely that @zenjito, @jaradseng and @MWhalan were highly engaged simply as fans of the series.

Figure 2 @HarrisonTheFan's Twitter profile indicating he is an aspiring media professional

The next phase of research is to interview these participants to identify the motivation behind their contribution where the results from these interviews will be presented in the

full conference paper. This research supports the concepts previously outlined for the role of the cultural intermediary in the facilitation of the co-creative activities in an online environment (Hutchinson 2013). The conversation style that the facilitating ABC co-creators adopt is one that engages, inspires and encourages interaction with the participants, signalling a development in the collaborative production model that engages users across multiple platforms. The point of departure for this research is to understand how social network analysis can be embedded into the production process itself. An iterative production methodology that engages finely grained social network analysis is useful in identifying key network influencers to improve our understanding of how social TV can work alongside a collaborative television production model.

References

Cunningham, Stuart. (2013). *Hidden Innovation: Policy, Industry and the Creative Sector*. Brisbane: University of Queensland Press.

Debrett, M. (2010). *Reinventing Public Service Television for the Digital Future*. Bristol: Intellect. Hutchinson, Jonathon. (2013). Communication models of instituional online communities: the role of the ABC
cultural intermediary. *Platform Journal of Media and Communication, 5*(1). **License**

Mapping Social TV Audiences: The Footprints of Leading Shows in the Australian Twittersphere

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Abstract

Drawing on the results of a long-term research project into the network structure of the Australian Twittersphere, combined with an investigation of audience participation through social media in selected reality TV and political debate shows, this paper maps the location of the *Twitter* communities participating in the social TV components of the selected shows onto the underlying follower/followee network structure of the Australian national Twittersphere. In doing so, it addresses questions about the homology or distinctions between the social TV audiences for the different shows; the correlation between existing follower/followee relationships and participation in specific social TV activities; and the effects of *Twitter* activity related to specific shows in making these shows visible to the entire national *Twitter* network. The development of such network-based approaches to the quantification and visualisation of social TV engagement makes another important to the development of reliable and generally applicable metrics for social television.

Mapping the Australian Twittersphere

This paper builds on a long-term research project which seeks to map the national Australian Twittersphere. Conducting a snowball crawl of follower/followee networks which began with a seed list of confirmed Australian users (as defined by a number of parameters set in the users' public *Twitter* profiles, including timezone, GPS coordinates, location text and description text), the project had identified more than one million Australian *Twitter* accounts and their follower/followee connections by 2013 – out of an estimated 2.5 million total Australian *Twitter* accounts as of March 2013 (Sensis, 2013) – and has since continued to gather further data. In 2014, it will complete a full scan of the entire *Twitter* userbase for Australian accounts. Fig. 1 presents a preliminary network map of follower/followee relations in the Australian Twittersphere, showing the 120,000 most connected users of the one million accounts identified at the time, plotted in Gephi using a Force Atlas 2 network visualisation algorithm. Network cluster labels were derived from a thematic classification of the central accounts in each of the clusters (see Bruns, Burgess, and Highfield, 2014, for further detail on this research).
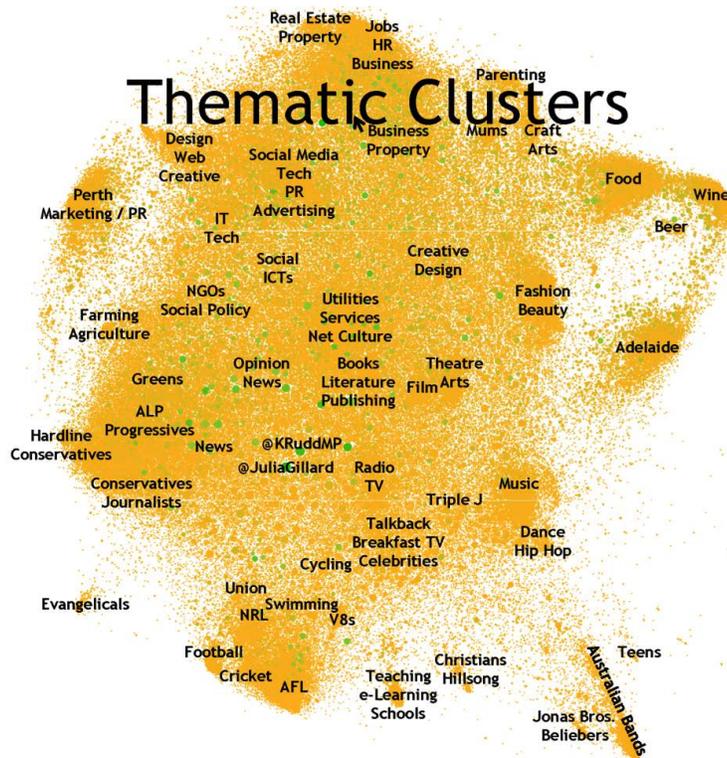
Fig. 1: Preliminary map of follower/followee relationships in the Australian Twittersphere, based on data for ~1 million accounts. 120,000 most connected accounts shown.

Viewed for itself, this preliminary map reveals several key patterns about the predominant interests of Australian *Twitter* users. There is a significant community of users, stretching across several sub- clusters, whose follower/followee connections centre on news and political debate, to the left of the network; other major communities stretch across several fields of business (at the top) as well as sports (at the bottom). Other, more distinct clusters exist around several lifestyle topics (to the right), while a number of outlying clusters indicate communities of Australian users which remain largely disconnected from the mainstream Australian Twittersphere, but may instead have very strong connections with like-minded international user groups that are absent from this map by virtue of their nationality (e.g. evangelicals, teen music fans).
Our continuing efforts to identify further Australian accounts within the global *Twitter* userbase will add further detail to this map; with almost half of the estimated Australian *Twitter* population already mapped, it is unlikely that the overall patterns found in the preliminary map will still change significantly. At the conclusion of our full crawl of the Australian Twittersphere in 2014, the preliminary map shown in fig. 1 will be replaced with a more comprehensive depiction of follower/followee networks; further, incremental revisions will be made in the future as *Twitter* accounts created from 2014 onwards are added to the network.

Mapping the Footprint of Social Television in the Australian Twittersphere

Both in its preliminary form in fig. 1 and in the more comprehensive form which will be created based on new data in 2014, this map of the national Twittersphere becomes a

key research tool for the further investigation of *Twitter* use in Australia, in a variety of contexts. For the purposes of the present paper, we focus on an investigation into the nature and structure of Australian social television audiences. Here, we explore in particular the following three key areas: the location of audiences for specific social TV programming within the Australian Twittersphere; the overlap and interconnection (or lack thereof) between specific shows' audiences; the correlation between participation in social TV audiences and existing follower/followee relationships; and the visibility across the Australian Twittersphere which audience activities afford these shows.

To explore these aspects, we have selected a number of key Australian television shows which incorporate notable social TV elements: the weekly political talk show *Q&A*, televised by the public broadcaster, the Australian Broadcasting Corporation; the Australian edition of the popular reality TV show *Big Brother*, screened by the leading commercial Nine Network; and the cooking competition show *Masterchef*, shown by the smallest of Australia's three free-to-air networks, Channel Ten. *Twitter* activity data (across relevant hashtags, accounts, and keywords) for all three shows was gathered during 2013 and the first months of 2014.

Preliminary analysis of a number of these shows currently indicates a relatively limited overlap between these actively tweeting social media audiences for these shows (fig. 2); a more comprehensive investigation of audience participation patterns across the shows, once their current series have each concluded, may result in somewhat different activity patterns, however. Not included in fig. 2 is data for political talk show *Q&A*, which – due to its different topical focus and its screening by the public broadcaster – is likely to attract a vastly different social media audience. In combination, then, the different programmes chosen for analysis by this paper will be able to provide insights into the social TV participation patterns for a wide variety of programming.

Location of Audiences in the Australian Twittersphere

The first step in our analysis of the social media footprints of these shows is to locate them on our underlying map of the Australian Twittersphere. This provides an indication of where in the overall national *Twitter* network these shows recruit their social TV audiences, and in comparison also shows the extent to which these audiences are homologous or distinct from each other. To illustrate this process, fig. 3 uses data from 2012 to map participants in the #masterchef hashtag (accompanying that year's season of the show) onto the overall map of the Australian Twittersphere. Closer analysis reveals strong participation especially from users in clusters related to food, wine, and other lifestyle pursuits (to the right of the map), as well as from the radio/TV and surrounding clusters (bottom centre), but also shows widespread participation from across the Australian Twittersphere, indicating the mainstream popularity of the show well beyond narrowly defined target audiences. Other social TV programming is likely to recruit its audiences from substantially different areas within the overall network.

Correlation between Activity and Existing Networks

Second, we will explore the correlations between existing follower/followee networks and social TV audiencing activity. Although it is impossible to infer causality on the basis of available data (to do so would require interviews or surveys with social television

audiences, which we may seek to conduct at a later stage), it is nonetheless likely that participation in social TV activities – such as tweeting into a show's advertised hashtag – is in part driven by an observation that one's network connections are doing likewise: observing a show's hashtag in their *Twitter* feed may lead a user to contribute to the hashtag as well. At the same time, the widespread advertising of relevant hashtags in a show's previews and promos, as well as during the episodes themselves, may also encourage audience members to begin tweeting of their own accord, without observing any prompts from their existing network connections.

In this second stage of the research, we therefore seek to use network analytics explore the extent to which hashtag communities bring together previously unconnected users within the same space, or to which they merely map onto existing follower/followee relationships. In doing so, we distinguish between mere hashtag participation (posting tweets while using the show's hashtag) and direct hashtagged interaction (posting @replies which also contain the hashtag), and work from the hypothesis that while hashtag participation brings together previously unconnected users in an *ad hoc* public (cf. Bruns & Burgess, 2011), direct hashtagged interaction takes place largely between users who are already also connected by follower/followee relationships.
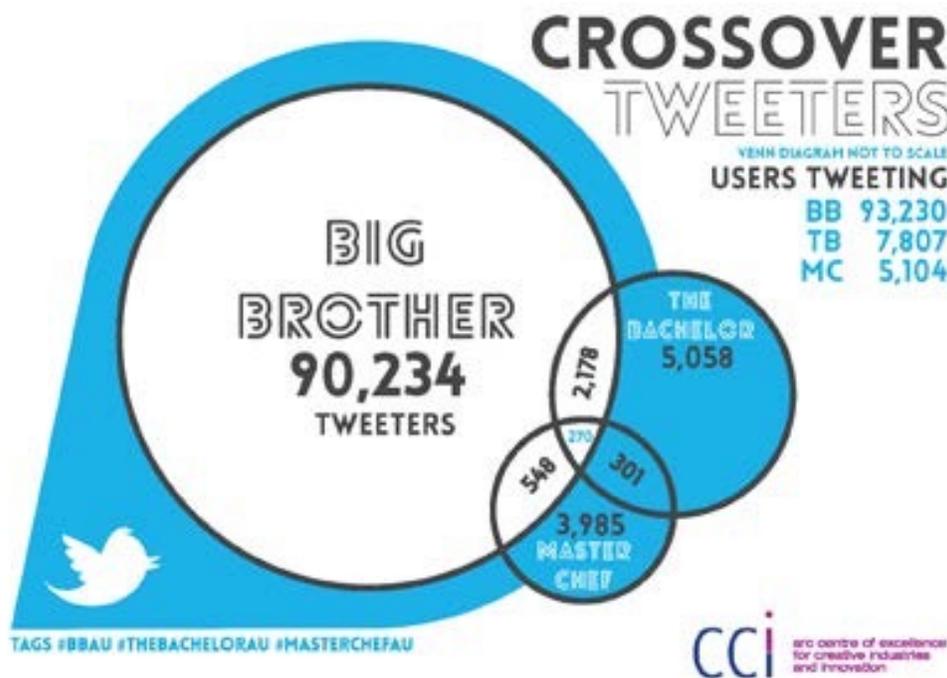

Fig. 2: Overlap in Twitter *audiences for* Big Brother Australia, The Bachelor Australia, *and* Masterchef Australia

Fig. 3: Location of Masterchef *audience members (using the #masterchef hashtag) in the Australian Twittersphere*

Visibility of Social TV Audiences

Finally, we also seek to measure the overall visibility in the Australian Twittersphere which their social TV audiences afford these shows. To do so, we consider not only those users who are actively posting relevant tweets, but examine the total size of the *Twitter* audience which could conceivably have seen these tweets in their incoming activity streams, and the total number of relevant tweets which – on the basis of their network connections – each user would have received. Taken together, this results in an audience heatmap for each of the shows, overlaid on top of the national Twittersphere map, to indicate areas of the network where even those users who did not actively engage in the social media activities related to a show would have received a detailed feed of updates about the programme, and areas of the network where it would have been possible for users to have remained entirely unaware of any news related to the show. Such analysis is crucial for measuring both the depth and breadth of audience participation in a social TV initiative, and as a basis for quantifying the return on investment in social TV activities around a programme.

Conclusion

In combination, these three approaches to measuring and visualising the level of social media activities around television programming offer new opportunities for the reliable and comparative quantification of the success and impact of social TV initiatives. The work we will present in this paper provides a first point of entry for further and more

detailed research to develop additional analytical methods and metrics which are both scholarly rigorous and of potential commercial value.

References

Bruns, A., and J. Burgess. (2012). The Use of Twitter Hashtags in the Formation of *Ad Hoc* Publics. Paper presented at the European Consortium for Political Research conference, Reykjavík, 25-27 Aug. 2011.

Bruns, A., J. Burgess, and T. Highfield. (2014). A 'Big Data' Approach to Mapping the Australian Twittersphere. In K. Bode and p. Arthur, eds., *Repurposing the Digital Humanities: Research, Methods, Theories*. Basingstoke: Palgrave Macmillan.

Sensis. (2013). *YellowTM Social Media Report: What Australian People and Businesses Are Doing with Social Media*. Melbourne: Sensis. http://about.sensis.com.au/IgnitionSuite/uploads/docs/Yellow%20Pages%20Social%20 Media%20Repo rt_F.PDF

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Live-Tweeting Scandal: *Twitter* Communities and Modes of Social Engagement Amongst a Television Viewing Audience

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Abstract

Live-tweeting refers to an open-ended discourse that unfolds through social media services during real-time television programming. Live-tweeting offers a opportunity for audience researchers to hear *in situ* commentary from thousands of viewers at once. These social media conversations may include audiences who are otherwise absent or obscured in traditional media metrics. Although activity on *Twitter* is conventionally measured at the level of population, we complement this macro perspective with "participant viewing," a form of participant observation in which researchers actively engage with an unfolding television event using both semi-automated research tools and *Twitter's* own interfaces. The present research seeks to better understand the phenomenon of Black Twitter through an observation of live-tweeting activity during the prime-time drama *Scandal*. Within this lively discursive space, we suggest several possible sub-categories of users based on distinct live-tweeting practices.

"Live-Tweeting" and Television Audience Measurement

Despite the visibility of the practice of "live-tweeting" entertainment television events, researchers have yet to extensively explore what live-tweeting can tell us about American television viewing audiences' communication behaviors, meaning-making practices, expressions of pleasure (or displeasure), and social interactions. While there are a few exceptions (see Wood & Baughman, 2012), much of the extant literature on live-tweeting focuses specifically on political debates (Hawthorne, Houston, & McKinney, 2013; Houston, et al., 2013; Houston, McKinney, et al., 2013). In the post-network era (Lotz, 2007), live-tweeting is a key component to television networks' marketing and research efforts. With escalating competition amongst broadcast, cable, and online streaming services, television producers both vie for the attention of new audiences and struggle to reliably measure existing audiences.

This research takes an extensive look at the social practices and relationships among *Twitter* users actively live-tweeting the *Scandal* season three premiere. The impetus for this study was to expand our knowledge about a subset of *Twitter* users colloquially referred to as "Black Twitter." Because African-Americans are frequent users of *Twitter* (see Hargittai & Litt, 2011; Smith, 2013), and due to the popularity of *Scandal* amongst Black viewers, this study provides valuable insight into this specific community of *Twitter* users and their social interactions during television viewing.

Participant viewing

The team assembled a comprehensive set of search criteria, including terms relevant to the *Scandal* storyline; fan terminology; hashtags promoted by network, and a list of users who regularly tweeted during the second season. A script was written to continuously access the "filter" function of Twitter's public Streaming API. The observation period began on October 3, 2013 at 7:00pm EST (4:00pm PST), three hours prior to the East Coast premiere of Scandal. A team of researchers gathered on the West Coast to watch a stream of this broadcast and to monitor the first round of live-tweeting. During this "participant viewing" session, researchers identified and anticipated emerging hashtags, terms, and user accounts which were added to the data collection apparatus in near real-time. At the conclusion of the East Coast premiere, the data collection process was left running until 3:00am EST (12:00am PST), an hour after the conclusion of the West Coast premiere.

Observations about Users and Tweets

The final collection of tweets related to *Scandal* season three premiere included 315,526 messages authored by 113,168 unique users. Slightly more than 193,024 (61%) of the messages were "original" tweets, meaning they were not retweets. Thirty-nine percent of the tweets (122,502) were identified as retweets (which includes RT, MT, and via), and of these, 8,261 were "edited" retweets (retweets with commentary). 179,575 tweets mentioned at least one other @username (including retweets) and, of this group of tweets, 27,436 were direct @-replies (9% of the overall collection.) Only five percent (14,605) of the tweets contained links to one or more URLs. The majority of the tweets, 88% (276,825) contained at least one hashtag. Finally, as it pertains to users, 90% (N=112,466) sent twenty-six or fewer tweets. Nine percent (N=711) of users sent between 26 and 108 tweets, while 11 highly prolific user accounts (1%) sent between 108 and 178 tweets during the observation period.

Toward a live-tweeting typology

Preliminary analysis of this collection indicates that live-tweeting users may be distinguished both by their practices and by their relationships to other users. Figure 1 depicts a distribution of users according to the frequencies of their incoming and outgoing @-mentions (including occasions in which they are retweeted.) User accounts colored in gold are "verified" users while user accounts colored blue are not verified. Although the criteria by which *Twitter, Inc*. selects users for verification is highly subjective, this categorical distinction is useful for identifying likely celebrity accounts at

a quick glance. The red line diagonally bisecting the image indicates perfect parity between incoming and outgoing @-mentions.
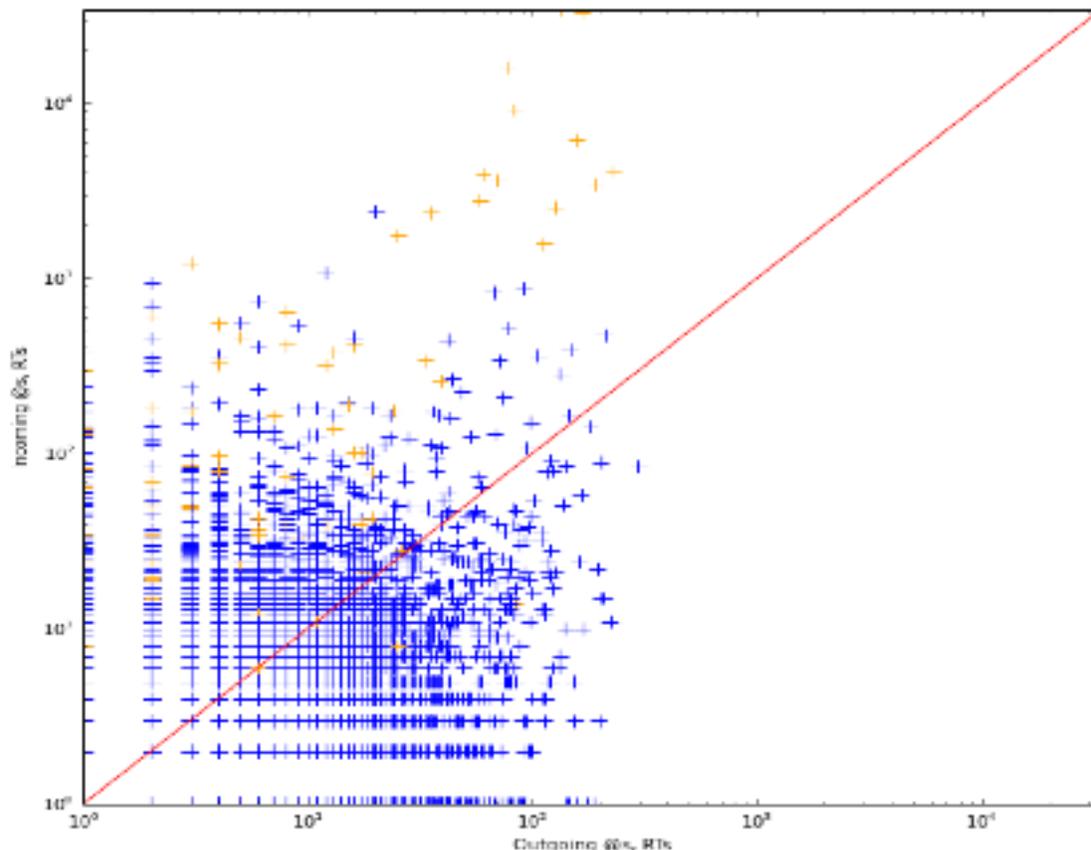
Figure 1: Users plotted according to incoming and outgoing @-mentions (including retweets).

A small number of users were randomly selected from each of three regions of the chart in Figure 1 for closer analysis. User accounts with considerably more incoming than outgoing messages included participants in the production of *Scandal*, such as Kerry Washington and Shonda Rhimes; other celebrities such as Mariah Carey; and the accounts of media organizations such as @ScandalABC. While these users were highly-engaged with the live-tweeting activity during the Scandal premiere, the were only able to interact with a small number of their fellow users as they were inundated with @-mentions and retweets. The inverse class of users, those with more outgoing than incoming @- mentions, encountered *Twitter* very differently. Many of these users exhibited parasocial tweeting practices and the tone of their timelines took on the qualities of a personal diary addressed to one or more of the celebrity users. For example, one tweet read, "I need Olivia Pope to come and perfect lies for me. I'm a terrible liar. @kerrywashington @ScandalABC #Scandal." Finally, user accounts with nearly symmetrical in- and out-bound tweets included big name *Scandal* fans and pop culture critics whose activity tended toward the conversational. In these timelines, we observed multiple overlapping back-and-forth relationships in which the users engaged in playful co-watching commentary.

Conclusion

Black Twitter represents a particularly challenging site for developing new methods in social media research and audience studies. Black Twitter is at once highly visible and extremely difficult to reliably identify with the conventional tools of large-scale data metrics. *Scandal* offered a predictable event during which a subset of Black Twitter users were likely to be visible. The "participant viewing" approach described in this paper represents a combination of micro- and macro-scale perspectives that enabled collaboration among scholars with different methodological training. This interdisciplinarity, in turn, drove a set of analyses that call attention to the diversity of practices and plurality of voices that made up the population of users live-tweeting *Scandal*. Future research will expand the scope of observation beyond *Scandal* to other cultural and political events relevant to Black Twitter.

Acknowledgments

References

Hargittai, E., and Litt, E. (2011). The tweet smell of celebrity success: Explaining variation in Twitter adoption amongst a diverse group of young adults. *New Media & Society*, 13(5), pp. 824-842.

Hawthorne, J., Houston, J. B., and McKinney, M.S. (2013). Live-tweeting a presidential primary debate: Exploring new political conversations. *Social Science Computer Review*, 31(5), pp. 552-562.

Houston, B. J., Hawthorne, J., Spialek, M. L., Greenwood, M., and Mckinney, M.S. (2013). Tweeting during presidential debates: Effect on candidate evaluations and debate attitudes. *Argument and Advocacy*, 49(4), pp. 301-311.

Houston, B. J., McKinney, M.S., Hawthorne, J., Spialek, M.L. (2013). Frequency of tweeting during presidential debates: Effect on debate attitudes and knowledge. *Communication Studies*, 64(5), pp. 548-560.

Kondolojy, A. (2013, October 7). 'Scandal' tops Nielsen Twitter TV Ratings for the week of September 30- October 6. Retrieved from http://tvbythenumbers.zap2it.com/2013/10/07/scandal-tops-nielsen-twitter- tv-ratings-for-the-week-of-september-30-october-6/207432/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+Tv bythenumbers+ %28TVbytheNumbers%29

Lotz, A. (2007). *The television will be revolutionized*. New York: New York University Press. Smith, M. A. (2013). African Americans and technology use: A demographic portrait. Pew Research Center.
Retrieved from http://www.pewinternet.org/2014/01/06/african-americans-and-technology-use/

Smith, M. A., Rainie, L., Shneiderman, B., and Himelboim. (2014). Mapping Twitter topic networks: From polarized crowds to community clusters. Pew Research Center. Retrieved from: http://www.pewinternet.org/2014/02/20/mapping-twitter-topic-networks-from-polarized-crowds-to- community-clusters/

Wood, M.M., and Baughman, L. (2012). Glee fandom and Twitter: Something new, or more of the same old thing? *Communication Studies*, 63(3), pp. 328-344.

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