The Use of Twitter Hashtags in the Formation of *Ad Hoc* Publics

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Abstract

As the use of *Twitter* has become more commonplace throughout many nations, its role in political discussion has also increased. This has been evident in contexts ranging from general political discussion through local, state, and national elections (such as in the 2010 Australian elections) to protests and other activist mobilisation (for example in the current uprisings in Tunisia, Egypt, and Yemen, as well as in the controversy around *Wikileaks*).

Research into the use of *Twitter* in such political contexts has also developed rapidly, aided by substantial advancements in quantitative and qualitative methodologies for capturing, processing, analysing, and visualising *Twitter* updates by large groups of users. Recent work has especially highlighted the role of the *Twitter* hashtag – a short keyword, prefixed with the hash symbol '#' – as a means of coordinating a distributed discussion between more or less large groups of users, who do not need to be connected through existing 'follower' networks.

Twitter hashtags – such as '#ausvotes' for the 2010 Australian elections, '#londonriots' for the coordination of information and political debates around the recent unrest in London, or '#wikileaks' for the controversy around *Wikileaks* thus aid the formation of *ad hoc* publics around specific themes and topics. They emerge from within the *Twitter* community – sometimes as a result of pre-planning or quickly reached consensus, sometimes through protracted debate about what the appropriate hashtag for an event or topic should be (which may also lead to the formation of competing publics using different hashtags).

Drawing on innovative methodologies for the study of *Twitter* content, this paper examines the use of hashtags in political debate in the context of a number of major case studies.

Introduction

Australia, 23 June 2010: rumours begin to circulate that parliamentarians in the ruling Australian Labor Party are preparing to move against their leader, Prime Minister Kevin Rudd. Rudd had been elected in a landslide in November 2007, ending an 11-year reign by the conservative Coalition, but his personal approval rates had slumped over the past months, further fuelling his colleagues' misgivings over his aloof, bureaucratic leadership style. In spite of the fact that opinion polls continued to predict a clear victory for the ALP in the upcoming federal elections later that year: that Wednesday evening, Labor members of parliament are considering the unprecedented – the replacement of a first-term Prime Minister, barely two and a half years after his election.

As rumours of a palace revolution grow, Australia's news media also begin to cover the story, of course; special bulletins and breaking news inserts interrupt regular scheduled programming. However, amongst the key spaces for political discussion that evening is *Twitter*: here, those in the know and those who want to know meet to exchange gossip, commentary, links to news updates and press releases, and photos of the gathering

media throng. The growing crowd of *Twitter* users debating the impending leadership spill includes government and opposition politicians, journalists, celebrities, well-known *Twitter* micro-celebrities, and regular users; by midnight, some 11,800 *Twitter* users will have made contributions to the discussion.[1]

Events such as the ALP leadership crisis of 2010 demonstrate the importance which *Twitter* now has in covering breaking news and major crises; from the killing of Osama bin Laden through the *News of the World* scandal to the U.S. debt crisis, *Twitter* has played a major role in covering and commenting on such events. The central mechanism for the coordination of such coverage on *Twitter* is the hashtag: a largely user-generated mechanism for tagging and collating those messages – tweets – which are related to a specific topic. Senders include hashtags (brief keywords or abbreviations, prefixed with the hash symbol '#') in their messages to mark them as addressing particular themes. For *Twitter* users, following and posting to a hashtag conversation makes it possible for them to communicate with a community of interest around the hashtag topic without needing to go through the process of establishing a mutual follower/followee relationship with all or any of the other participants; in fact, it is even possible to follow the stream of messages containing a given hashtag without becoming a registered *Twitter* user.

In the case of the ALP leadership challenge, *Twitter* users quickly settled on the hashtag #spill (Australian political slang for a party room vote on the leadership); during 23 June 2010 alone, 11,800 participating *Twitter* users generated over 50,000 tweets containing the #spill hashtag. Indeed, the majority of those tweets are concentrated between 19:00 and midnight, as the rumours were further amplified by mainstream media coverage; between 22:00 and 23:00, #spill tweets peaked at more than 4,500 per hour (or 75 per minute), while activity prior to 19:00 barely reaches ten tweets per hour (Bruns, 2010a/b). This fast ramping-up of activity in the evening also demonstrates *Twitter*'s ability to respond rapidly to breaking news – an ability which builds not least on the fact that new hashtags can be created *ad hoc*, by users themselves, without any need to seek approval from *Twitter* administrators. As we will argue in this paper, this enables hashtags to be used for the rapid formation of *ad hoc* issue publics, gathering to discuss breaking news and other acute events (Burgess, 2010; Burgess & Crawford 2011).

A Short History of the Twitter Hashtag

In the early phases of adoption following its launch in 2006, Twitter had almost none of the extended functionality that it does today. Twitter users were invited to answer the question "What are you doing?" in 140 characters or less, to follow the accounts of their friends, and little else (see Burgess, 2011a). Many of the technical affordances and cultural applications of Twitter that make its role in public communication so significant were originally user-led innovations, only later being integrated into the architecture of the Twitter system by Twitter, Inc. Such innovations include the cross-referencing functionality of the @reply format for addressing or mentioning fellow users, the integration of multimedia upload into Twitter clients, and most significantly for this paper – the idea of the hashtag as a means to coordinate Twitter conversations.

As a concept, the hashtag has its genealogy in both IRC channels and the 'Web 2.0' phenomenon of user-generated tagging systems or 'folksonomies', common across various user-created content platforms by 2007, and with Flickr and del.icio.us being the most celebrated examples. The use of hashtags in Twitter was originally proposed in mid-2007 by San Francisco-based technologist Chris Messina, both on Twitter itself and in a post on his personal blog, entitled "Groups for Twitter, or a Proposal for Twitter Tag Channels" (Messina, 2007a). Messina called his idea a "rather messy proposal" for "improving *contextualization*, *content filtering* and *exploratory serendipity* within Twitter" by creating a system of "channel tags" using the pound or hash (#) symbol, allowing people to follow and contribute to conversations on particular topics of interest. The original idea, as the title of Messina's post indicates, was linked to proposals within the Twitter community for the formation of Twitter user groups based on interests or relationships; counter to which Messina argued that he was "more interested in simply having a better eavesdropping experience on Twitter." So rather than 'groups',

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[1] Using the #spill hashtag (see below); many more may have tweeted about the event without using the hashtag itself.

hashtags would create ac hoc *channels* (corresponding to IRC channels) to which groupings of users could pay selective attention. While Messina went on to propose complex layers of user command syntax that could be used to manage and control these "tag channels" (including subscription, following, muting and blocking options), the basic communicative affordance of the Twitter hashtag as we know it today is captured in his vision for the "channel tag":

> *Every time someone uses a* channel tag *to mark a status, not only do we know something specific about that status, but others can* eavesdrop *on the context of it and then join in the channel and contribute as well. Rather than trying to ping-pong discussion between one or more individuals with daisy-chained @replies, using a simple #reply means that people not in the @reply queue will be able to follow along, as people do with Flickr or Delicious tags. Furthermore, topics that enter into existing channels will become visible to those who have previously joined in the discussion.*

At first there was little take-up of Messina's idea – until the October 2007 San Diego bushfires demonstrated a clear use-case (and partly as a result of Messina's activism during that event, urging people to use the hashtag to coordinate information – see Messina, 2007b). Over time, the practice became embedded both in the social and communicative habits of the Twitter user community, and in the architecture of the system itself, with the internal cross-referencing of hashtags into search results and trending topics. Of course, like most successful innovations, the hashtag's original intended meaning as an "invention" has long since become subverted and exceeded through popular use; largely attributable to its stripped-down simplicity and the absence of top-down regulation around its use – there is no limit or classification system for Twitter hashtags, so all a user need do to create or reference one is to type the pound/hash symbol followed by any string of alphanumeric characters. In the years since 2007, through widespread community use and adaptation, the hashtag has proven itself to be extraordinarily high in its capacity for "cultural generativity" (Burgess, 2011b) and has seen a proliferation of applications and permutations across millions of individual instances – ranging from the coordination of emergency relief (Hughes & Palen, 2009) to the most playful or expressive applications (as in Twitter 'memes') or jokes (Huang *et al.*, 2010); to the co-watching of and commentary on popular television programs (Deller, 2011); and of course – the topic of this paper – the coordination of *ad hoc* issue publics, particularly in relation to formal and informal politics (Small, 2011).

The Uses of Hashtags

What already emerges from this discussion is that hashtags may be used for a wide range of purposes – and while the focus of our paper is on the use of hashtags to coordinate public discussion and information-sharing on news and political topics, it is useful to outline a brief typology of different hashtag uses.

In the first place, hashtags can be used to mark tweets are relevant to specific known themes and topics; we have already encountered this in the example of the Australian leadership #spill, for example. Here, a drawback of the *ad hoc* and non-supervised emergence of hashtags is that competing hashtags may emerge in different regions of the Twittersphere (for example, #eqnz as well as #nzeq for coverage of the Christchurch earthquakes in 2010 and 2011), or that the same hashtag may be used for vastly different events taking place simultaneously (for instance, #spill for the BP oil spill in the Gulf of Mexico during the first half of 2010, as well as for the leadership challenge in the Australian Labor Party).

Twitter users themselves will often work to resolve such conflicts quickly as soon as they have been identified – and such efforts also demonstrate the importance of hashtags as coordinating mechanisms: users will actively work to keep 'their' hashtag free of unwanted or irrelevant distractions, and to maximise the reach of the preferred hashtag to all users. Where – as in the case of #spill – both sides have a legitimate claim to using the hashtag, it is often the more populous group which will win out; on 23 June, for example, the political crisis in Australia drew considerably more commenters than the Gulf of Mexico oil spill which had been in the news for several months already, and suggestions to disambiguate the two by marking leadership-

related posts with alternative hashtags such as #laborspill, #spill2, or #ruddroll were not widely heeded. Instead, Australian *Twitter* users occasionally posted messages to explain the takeover of 'their' hashtag to those still following the oil spill – for example

> those who do not know a #spill in leadership terms is basically saying the big job is now vacant no relation to the oil spill of bp style

while those following from outside Australia expressed their confusion at this sudden influx of new messages:

> Ok what's with the #spill tag? Has BP dumped more oil?

On the other hand, where – as in the case of #eqnz vs. #nzeq – what should be a unified conversation is splintered across two or more hashtags, participants often try to intervene to guide more users over to what they perceive to be the preferred option. Here, messages from major, authoritative accounts can act as influential rolemodels for 'correct' hashtag use, but users will also encourage those authorities to use hashtags 'properly' if they do not do so initially:

> @NZcivildefence please use #eqnz hashtag. Thanks.

At the same time, a splintering of conversations may also be desirable as themes shift or diversify. So, for example, while general discussion of everyday political events in Australia is commonly conducted under the hashtag #auspol, separate hashtags are regularly used to track parliamentary debate during Question Time (#qt) or to comment on the weekly politics talk-show *Q&A* on ABC TV (#qanda), as well as for the discussion of specific issues or crises (for example, #cp for debate about the government's proposed carbon pricing scheme). Where sensible (or where they wish to maximise their message's reach), *Twitter* users may also use multiple hashtags to address these various, overlapping constituencies.

Such examples underline the interpretation of using a thematic hashtag in one's tweet as an explicit attempt to address an imagined community of users who are following and discussing a specific topic, therefore – and the network of *Twitter* users which is formed from this shared communicative practice must be understood as separate from follower/followee networks. At the same time, the two network layers overlap: tweets marked with a specific hashtag will be visible *both* to the user's established followers, *and* to anyone else following the hashtag conversation. Users from the follower network who respond and themselves include the hashtag in their tweets thereby also become part of the hashtag community, if only temporarily, while responses to or retweets of material from the hashtag conversation are also visible to the follower network (similarly, some users may retweet topical tweets from their followers while adding a hashtag in the process, thereby making those tweets visible to the hashtag community as well). Each user participating in a hashtag conversation therefore has the potential to act as a bridge between the hashtag community and their own follower network.

At the same time, not all users posting *to* a hashtag conversation also *follow* that conversation itself: they may include a topical hashtag to make their tweets visible to others following the hashtag, thereby increasing its potential exposure, but may themselves continue to focus only on tweets coming in from their established network of followers (this is especially likely for very high-volume hashtagged discussions). Conversely, not all relevant conversations following on from hashtagged tweets will themselves carry the hashtag: to hashtag a response to a previous hashtagged tweet, in fact, may be seen as performing the conversation in front of a wider audience, by comparison with the more limited visibility which a non-hashtagged response would have.

Beyond such thematic, topically-focussed uses of hashtags, a number of other practices are also evident, however. A looser interpretation of hashtagging is present in tweets which simply prepend the hash symbol in front of selected keywords in the tweet:

#japan #tsunami is the real killer. #sendai #earthquake PGA only 0.82g. 2011 #chch #eqnz 2.2g http://j.mp/ecy39r

Such uses may be a sign that hashtags for breaking events have not yet settled (and that the sender is including multiple potential hashtags in their message in order to ensure that it is visible to the largest possible audience), or that the sender is simply unaware of how to effectively target their message to the appropriate community of followers – additionally, of course, they could also be read as a form of *Twitter* spam. For the most part, at any rate, it is unlikely that significant, unified communities of interest will exist around generic hashtags such as #Japan or #Australia, for example: outside of major crises affecting these countries (when we may reasonably expect the vast majority of tweets to refer to current events), tweets carrying such generic hashtags will cover so wide a range of topics as to have very little in common with one another.

An alternative explanation for the use of such generic hashtags, then, is as a simple means of emphasis – especially in the absence of other visual means (such as bold or italic font styles). A hashtag like #Australia, therefore, should usually be seen as equivalent to text decorations such as '_Australia_' or '*Australia*', rather than as a deliberate attempt to address an imagined community of *Twitter* users following the #Australia hashtag conversation, such as it may be. (For any given hashtag, such assumptions may also be empirically tested, of course: for example by measuring the extent to which hashtagged messages are replying to one another. The lower the incidence of @replies in the hashtag stream, the more should the hashtag be understood as a marker of individual emphasis rather than of shared discourse.)

Such emphatic uses are especially evident in hashtags which (often ironically) express the sender's emotional or other responses – for example, #tired, #facepalm, or #headdesk. Here, hashtags take on many of the qualities of emoticons like ';-)' or ':-O' – they are used to convey extratextual meaning, in a *Twitter*-specific style (indeed, the increasing popularity of *Twitter* has even led to some overspill beyond the platform itself: some such hashtags have now also appeared in other forms of communication from email to print). Additionally, however, some of these hashtags – for example, #firstworldproblems or #fail – have also morphed into standing *Twitter* memes, to the point where some users may in fact have started to follow them for the entertainment they provide; here, a community of interest of sorts may once again have formed, then, even if few of the hashtagged messages themselves are intentionally addressing that community.

Topical Hashtag Communities

In the preceding discussion, we have used the term 'community' – however, the extent to which any one group of participants in a hashtag may be described as a community in any real sense is a point of legitimate dispute. The term 'community', in our present context, would imply that hashtag participants share specific interests, are aware of, and are deliberately engaging with one another, which may not always be the case; indeed, at their simplest, hashtags are merely a search-based mechanism for collating all tweets sharing a specific textual attribute, without any implication that individual messages are responding to one another (this is most evident in the case of emotive hashtags such as #headdesk).

On the other hand, there is ample evidence that in other cases, hashtags are used to bundle together tweets on a unified, common topic, and that the senders of these messages are directly engaging with one another, and/or with a shared text outside of *Twitter* itself. *Twitter* users following and tweeting about recurring political events such as Question Time or the *Q&A* TV show in Australia, for example, about televised political debates in the U.S. presidential primaries, or simply about the stories covered by prime time news, and using the appropriate hashtags as they do so, are responding to shared media texts by using *Twitter* as an external backchannel for these broadcast media forms. Such users may not necessarily also follow what everyone else is saying about these same broadcasts, but they do take part in an active process of 'audiencing', as members of the community of interest for these shows.

Further, while such participation in the active audience may still be seen merely as a form of implicit membership in a largely imagined community constituted by the active audience for these broadcasts, *Twitter*

itself may also provide some more explicit evidence for community participation. As noted above, it is possible, in particular, to measure the extent to which contributors to any given hashtag are actively responding to one another – by sending one another publicly visible @replies[2], or retweeting each other's messages (in the case of manual retweets, possibly adding further commentary as they do so). A high volume of such response messages would indicate that users are not merely tweeting *into* the hashtag stream, but are also following what others are posting; the more such messages are contained in the hashtag stream, then – and the greater the total number of participants who engage in this way –, the more can the hashtag community be said to act *as* a community. (While it is not the purpose of this paper to develop advanced *Twitter* metrics, we would suggest, in fact, that the ratio of responding to non-responding hashtag posters is especially valuable as an indicator of community: the fewer users merely post into the hashtag without also responding to others, the more thoroughly connected is the community.)

In this context, it should also be noted that the hashtag community itself, such as it may exist, necessarily also overlaps with other structural and communicative networks on *Twitter*. On the one hand, to regard tweets between two participants in a given hashtag conversation as evidence of a specific hashtag community may be to overestimate the importance of that hashtag, if the two users are also already connected as *Twitter* 'followers' of one another (that is, if they also subscribe to each other's update feeds) – in such cases, the two users did not need to rely on the hashtag as a mechanism for discovering one another's tweets, but would also have encountered them simply by reading their standard streams of incoming messages.

On the other hand, however, measuring the relative discursivity of hashtag conversations by identifying what percentage of hashtagged messages are responses to other users may also significantly underestimate the actual volume of user-to-user conversations which 'hang off' the hashtag: not all such responses will themselves include the original hashtag, and lengthy conversations between two users who found each other through their shared use of a hashtag may follow on from that discovery but take place entirely outside of the hashtag stream itself. (As noted above, to continue to hashtag each message in such bilateral conversations could be interpreted as deliberately performing of the conversation to the wider hashtag community.) Even hashtags with comparatively low numbers of responses in the overall message stream may still engender significant levels of conversation between hashtag contributors, then – but outside the hashtag stream itself.

On balance, such systematic and unavoidable over- and underestimations of the role hashtags may play in enabling and stimulating conversations between participating *Twitter* users may cancel each other out, then; more importantly, however, what emerges from these observations is a picture of hashtag communities not as separate, sealed entities, but as embedded and permeable meso-level spaces which overlap both with the macro-level flow of messages across longer-term follower/followee networks and with the micro-level communicative exchanges conducted as @replies between users who may or may not have found one another through the hashtag itself, as well as with other, related or rival, hashtag communities at a similar meso-level.

At a higher level of abstraction, the same may be said of *Twitter* and its variously defined communities of users (whether gathered around specific hashtags, closely interlinked as followers and followees, or connected through shared language, geography and other markers) and their position within the wider media ecology, alongside other social media platforms such as *Facebook* or *Google+*, and alongside other forms of online and offline media. *Twitter*, too, is one space for public discussion, one fragment of the public sphere, alongside a range of others; it is neither entirely separate from them (since its constituency of users overlaps with theirs, and communication flows across their borders), nor completely homologous with them (since different sociotechnical affordances enable different forms and themes of communication).

The overall picture, then, resembles that described by Bruns (2008: 69):

> What we see emerging … is not simply a fragmented society composed of isolated individuals, but instead a patchwork of overlapping public spheres centred around specific themes and communities

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[2] @replies are tweets which contain the username of the message recipient, prefixed by the '@' symbol. Private, direct messages would also indicate engagement between community members, of course, but such messages are not commonly available to researchers, for obvious reasons.

which through their overlap nonetheless form a network of issue publics that is able to act as an effective substitute for the conventional, universal public sphere of the mass media age; the remnants of that mass-mediated public sphere itself, indeed, remain as just one among many other such public spheres, if for the moment continuing to be located in a particularly central position within the overall network.

At the meso-level, this means that those hashtag communities which do act *as* discursive communities around a central shared interest should also be seen as issue publics, then – corresponding to, and in many cases also corresponding *with*, related issue publics as they may exist in other public spheres in areas such as politics, mainstream media, academia, popular culture, and elsewhere.

Hashtag Communities as *Ad Hoc* Publics

What particularly allows *Twitter* and its hashtag communities to stand out from such other spaces for issue publics is its ability to respond with great speed to emerging issues and acute events. In many other environments – especially those controlled by extensive top-down management structures, issue publics may form only *post hoc*: some time after the fact. Even online, news stories must be written, edited, and published; commentary pages must be set up; potential participants must be invited to join the group. *Twitter*'s user-generated system of hashtags condenses such processes to an instant, and its issue publics can indeed form virtually *ad hoc*, the moment they are needed: to include a hashtag in one's tweet is a performative statement: it brings the hashtag into being at the very moment that it is first articulated, and – as the tweet is instantly disseminated to all of the sender's followers – announces its existence. (That said, the extent to which the community around the hashtag becomes more than an issue public of one depends on its subsequent use by other participants, of course.)

Not all hashtag communities are such *ad hoc* publics, of course; some hashtag communities may even form *praeter hoc*, in anticipation of a foreseeable event (such as the scheduled Question Time or an upcoming election), or come together only some considerable time after the event, as its full significance is revealed. However, it is this very flexibility of forming new hashtag communities as and when they are needed, without restriction, which arguably provides the foundation for *Twitter*'s recognition as an important tool for the discussion of current events. This recognition is evident not least also in the utilisation of the platform by mainstream media organisations, politicians, industry, and other 'official' interests, while the bottom-up nature of *Twitter* as a communicative space continues to be visible in the inability of such institutional participants to effectively channel or dominate the conversation.

The dynamic nature of conversations within hashtag communities provides fascinating insights into the inner workings of such *ad hoc* issue publics: it enables researchers to trace the various roles played by individual participants (for example as information sources, community leaders, commenters, conversationalists, or lurkers), and to study how the community reacts to new stimuli (breaking news and new contributors). Such observations also offer perspectives on the interconnection of the community with other communicative spaces beyond *Twitter* itself, and on the relative importance of such spaces; in all, they point to the overall shape of the event.

Fig. 1, for example, depicts the development of the issue public discussing the Labor leadership challenge through the #spill hashtag, over the course of the hours from 19:00 to midnight on 23 June 2010. It shows the most active participating users during the overall period – those who sent more than five tweets to other users – as nodes in the network, and represents @replies and manual retweets exchanged between them as connections between these nodes ('button' retweets are not included here: this form of retweet does not allow the retweeting user to add any further response or commentary, and therefore represents only a passing-along of messages rather than a direct response).
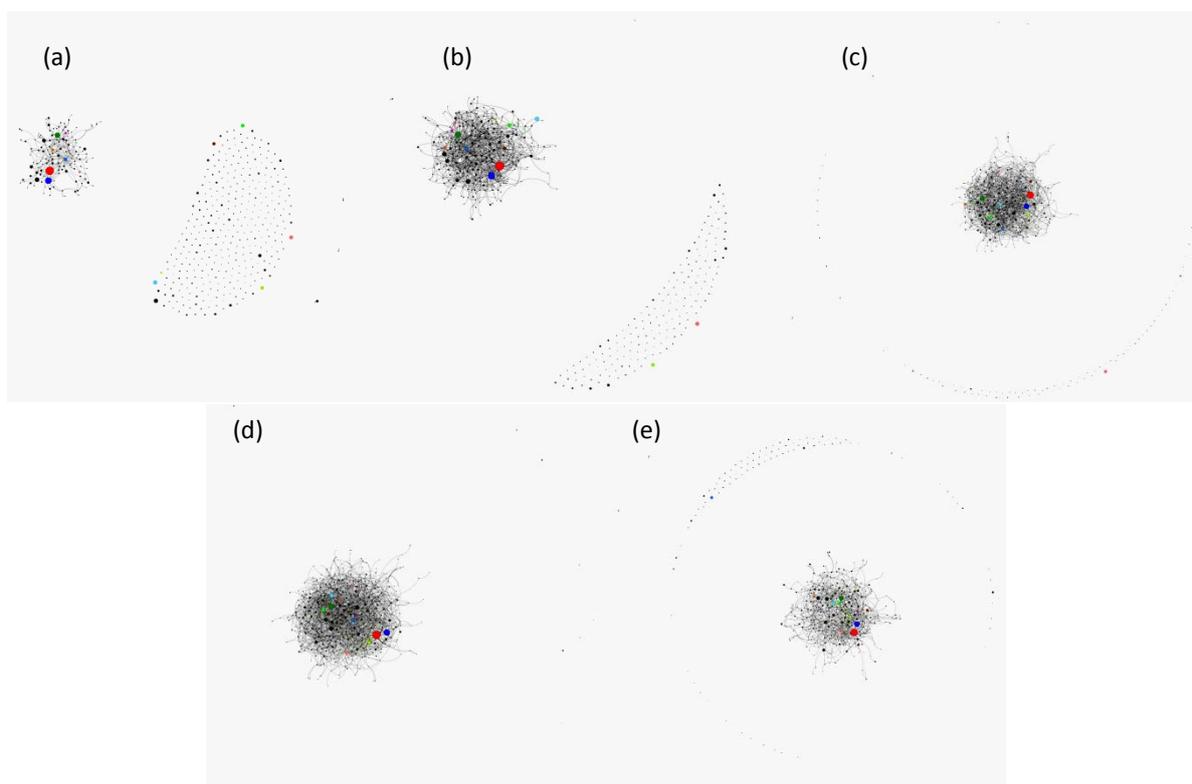
Fig. 1: Development of the #spill network over time – (a) 19-20h; (b) 20-21h; (c) 21-22h; (d) 22-23h; (e) 23-24h

It is immediately evident that the network grows gradually over time: during the first hours, a substantial number of users who have yet to make their first #spill tweet still remain in an unconnected, amorphous mass beside the active network. As time progresses, more of these users actively join the network, and a more elaborate network structure begins to develop; leading participants (those users who send or receive the most @replies and retweets) also emerge. While the purpose of this paper is to discuss the role of hashtags on *Twitter* in enabling the formation of issue publics, and a full analysis of the specific communicative patterns in the #spill hashtag community is beyond its scope, we do note the prominence of a number of active journalists (Latika Bourke, in green, and Annabel Crabb, in light blue) as well as of various politicians (Prime Minister Kevin Rudd, in red, who is talked *about* but does not respond, and former Opposition Leader Malcolm Turnbull, in blue) as key participants overall, while it is another journalist, Leo Shanahan (in medium blue), who is amongst the earliest participants to break the news.

The specific dynamics of communication in other hashtag communities may well be substantially different, of course; different events and crises will follow vastly different timelines, for example, and may attract considerably larger or smaller constituencies of participants, representing more or less diverse subsets of the overall *Twitter* userbase. Indeed, further research should aim to develop a detailed catalogue of such communicative events in order to better understand the patterns of interaction which occur as *ad hoc* issue publics form, engage, and (potentially) dissolve again. This must also build on the further development of advanced methodologies and metrics for the study of *Twitter* as a communication platform and social network.

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