#Democracy
Towards a Conceptual Framework for an Empirical Study of Political Conversations on Twitter

Philip Pond
RMIT University, Australia, philip.pond@rmit.edu.au

Angelina Russo
University of Canberra, Australia, angelina.russo@canberra.edu.au

Jeff Lewis
RMIT University, Australia, jeff.lewis@rmit.edu.au

Abstract
This paper seeks to establish a set of concepts to help frame an empirical analysis of the relationship between internet communication technologies and political discourses. It discusses theoretical and methodological issues relating to established frameworks for investigating the role that these technologies play in politics. Specifically, it attempts to problematise notions of the internet as an extension of the public sphere, which we argue underestimate the role that individual users play in the co-construction of meaning. Additionally, we suggest, there are unresolved conceptual issues relating to the epistemological and ontological relationship between ‘online’ democracy and the ‘offline’ physical and social institutions through which democracy is enacted traditionally. We use the micro-blogging service Twitter to illustrate a series of methodological steps that, we argue, could facilitate an empirical investigation of internet-mediated conversation.

Keywords: social media; democracy; digital dualism; Twitter

Introduction
In this article we question some of the assumptions inherent in popular claims about internet technologies and their role in contemporary political processes. Of course, this is familiar ground for techno-political theorists, and there is nothing particularly novel about questioning the presumptive relationship between internet technologies and democracy. Many authors have articulated concerns that internet technologies may not be the promised democratic panacea (Gladwell, 2010; Hindeman, 2010; Morozov, 2011). However, we hope to contribute to this on-going debate in a small way by laying the foundations of a conceptual framework that will eventually enable a close empirical reading of internet-enabled action. There is an increasingly urgent need for such empirical work because internet technologies are being granted an increasingly central role in policymaking.

Academic discussions involving internet technologies and politics tend to take one of two approaches. On the one hand, there are scholars interested in the internet’s potential for expanding and improving the day-to-day functionality of political actors and institutions. On the other, there are scholars whose interest in techno-politics tends to focus on specific periods of political and social protest. The different types of interest are summarised by Farrell, who also notes:
The broad literature on these questions has tended, until quite recently, to polemics rather than substance. It has gathered information not to test hypotheses, but either to provide rhetorical support for grand, sweeping arguments or to bludgeon rival arguments into non-existence. (Farrell, 2012, p. 1)

At one end of the spectrum, Tim O’Reilly invokes his own concept of Web 2.0 to explain just what Government 2.0 and government as platform might mean:

Government 2.0 is not a new kind of government; it is government stripped down to its core, rediscovered and reimagined as if for the first time … [it] is the use of technology – especially the collaborative technologies at the heart of Web 2.0 – to better solve collective problems at a city, state, national, and international level. (O’Reilly, 2010, p. 14)

Key to this vision is the idea that technology enables government to become participatory, a term that is much debated in the political sciences (e.g. Ekman & Annå, 2012). O’Reilly’s technology-driven solution to the “collective problems” in government is not without its critics, notably Evgeny Morozov (2013), who vigorously and enthusiastically denounces the “enduring emptiness” of the debate. Nevertheless, there are plenty more academic authors who see an increasingly significant role for internet technologies in expanding and improving democracy.

Internet Technologies and Democracy

According to the PEW Internet Project, 66% of social media users have used these platforms to post their thoughts on civic and political issues, engage in debate and encourage wider political activity among their contacts (Raine, Smith, Lehman Scholzman, Brady & Verba, 2012). Park (2013) finds that ‘opinion leadership’ on Twitter contributes to an individual’s involvement in the political process, but that simple use of Twitter does not necessarily help political engagement. Examining social media use during the 2008 US presidential election, Carlisle and Patton (2013) discover that political activity on Facebook is less prevalent than popular accounts might suggest. Indeed, Hindeman (2010) is quite dismissive of the internet’s potential to expand democracy, citing uneven access to internet technologies as one reason, while Jürgen Habermas thought that the internet would fragment the mass audience into a “huge number of isolated issue publics” (Habermas, 2006, p. 423).

Shirky (2011) has sought to describe how social media technologies “can strengthen civil society and the public sphere” (p. 5) in previously authoritarian states, while others see the rapid, uninhibited flow of information between citizens as a crucial factor in creating a politicised, protest-ready public (e.g. Tufecki, 2011). Starbird and Palen (2012) described how messages were disseminated via Twitter’s retweet mechanism during the 2011 protests in Cairo. They argue that the ability to retweet – to pass on another user’s message verbatim, or with comments – can encourage the widespread transmission, or contagion, of ‘memes’. When Twitter was heralded for its apparent role in supporting protests in Iran following disputed elections in 2009, one commentator wrote how the service “drove people around the world to pictures, videos, sound bites, and blogs in a true reality show of life, dreams, and death” (Pfeifle, 2009).

To date, then, there is little agreement that the internet delivers similar outcomes across political contexts and processes. This is unsurprising, perhaps, given that ‘the internet’ is a catch-all term for disparate technologies and behaviours. Uncertainty also remains as to how internet technologies might effect political outcomes. Farrell (2012) warns against seeking a ‘monocausal’ logic and instead suggests a search for different mechanisms “that might intervene between forms of communication such as the Internet, and final political outcomes” (p. 7). He suggests three possibilities. First, internet technologies may affect the cost of collective action, lowering communication costs and making it easier for political groups to recruit or to organise protests. Second, these technologies may make it easier for like-minded individuals to locate each other and cluster – a process he calls homophily. Third, they may affect individual propensity to disguise or falsify true political preferences, which may be significant in
authoritarian regimes especially (Farrell, 2012). While these different mechanisms may seem more or less probable, missing from the list is perhaps the most frequently assumed explanation for internet action on politics, namely that internet technologies can extend and invigorate the structural dynamics of the public sphere.

As Roberts (2009) articulates, the “argument about the democratising aspects of web participation revolves, explicitly or otherwise, around a set of assumptions about the nature of political communication and the functioning of what is often referred to as the ‘public sphere’”. The public sphere is the “intermediary system between state and society” (Habermas, 2006, p. 412), the structures that allow citizens to communicate and to debate with each other and with their central democratic institutions. For Habermas (2006), the normative function of the public sphere requires that those structures support deliberation: debate, leading to opinion formation, which is public and transparent; inclusive, offering equal opportunity for participation; and allowing “a justified presumption of reasonable outcomes” (p. 413). But, as Habermas also notes, in contemporary Western societies, the public sphere is “dominated by the kind of mediated communication that lacks the defining features of deliberation” (p. 414). In the remainder of the paper we are concerned with the effect that internet technologies may have on deliberative communication in the public sphere. We raise three issues that, we argue, complicate empirical studies of this mechanism in action. Then we suggest a tentative framework by which empirical accounts may be made more robust. Finally, we use the micro-blogging service Twitter to illustrate how our framework can be applied to specific cases of political deliberation.

The Networked Public Sphere

Internet technologies are now deeply enmeshed in the human social experience (Jurgenson, 2012b). The rise of the smartphone in techno-modern societies means that internet access tends towards ubiquity. Graham and Zook (2013) have described how physical spaces are increasingly constructed in concert with digital information, which is then layered on top of these spaces by technologies such as Google Maps, Wikipedia and customer-review sites. Personal and social lives are augmented by Facebook, Instagram and other networking services, as are modes of cultural and economic production. In short, internet technologies penetrate deeply and create a dense web of interaction both between the technologies themselves and between their users. Bruns, Burgess, Crawford and Shaw (2012) talk of a media ecology in which content moves between internet technologies, broadcast and print media. The density of this enmeshment makes empirical consideration of any one technology, or any one outcome, exceedingly difficult, both theoretically and methodologically. For instance, any general theory of how an internet technology affects the public sphere must be broadly applicable across different contexts but, time and again, observation of these technologies in action suggests that outcomes are highly context-specific.

In terms of designing and conducting empirical studies of these technologies – especially quantitative work – it is extremely difficult. first, to identify and control potential selection biases and, second, to mitigate the effect of potential confounders. It may be inappropriate to investigate ‘the internet’ as though it is a homogenous socio-communicative phenomenon, and better to focus on individual internet technologies – platforms like Facebook, services like email and so on. However, the unfortunate truth is that users do not limit themselves to just one platform or one service, and their involvement in the public sphere may be mediated by a whole range of interacting technologies. Indeed, it is likely that individuals who are especially active on Twitter, say, are more likely to maintain a Facebook network, write for Medium and so on. This creates confounding relationships within the media ecology that make it very difficult indeed to isolate one technology and consider its influence on something as complex and as nuanced as deliberative democracy. Additionally, of course, there are confounders external to specific media ecologies that equally complicate matters. Access to internet technologies may vary between groups in ways that mirror existing engagement with politics and deliberative political discussion (Hindeman, 2010). Educational and economic factors are likely to be particularly influential in this respect.
Social complexity and enmeshment are not unique to studies of internet technologies, of course. However, because internet technologies are particularly significant in terms of mediation, establishing the extent and effect of this enmeshment is important, and raises a second issue for the empiricist. Nathan Jurgenson (2012b) claims that atoms and bits – the physical and the digital – have become mutually constitutive; to speak of one as though it were separate from the other (either as a separate space, or a distinct reality) is a fallacy, one he calls digital dualism. Digital dualism is the idea that the internet exists in one place but not another, or that it constitutes a ‘reality’ distinct from our prevailing reality – what we might call the offline, physical or natural world. In Jurgenson’s own words; “Digital dualists believe that the digital world is ‘virtual’ and the physical world ‘real’” (Jurgenson, 2011). Instead, he wants: “to argue that the digital and physical are increasingly meshed, and … to call this opposite perspective that implodes atoms and bits rather than holding them conceptually separate augmented reality.”

One is unlikely to find many people holding the view that the digital (virtual) and physical spaces are wholly separate realities, which do not interact. It is similarly rare to find people who consider them indistinguishable. Rather the key distinction (which causes our confusion when thinking and writing about the internet) is between two “mild” positions:

Mild Digital Dualism: The digital and physical are different realities, have different properties, and do interact.

Mild Augmented Reality: The digital and physical are part of one reality, have different properties, and interact. (Jurgenson, 2012a)

Internet technologies may augment a single, physical state of being, or people may perceive a difference between their digital and physical experiences (Carr, 2013). Jurgenson’s mild augmented reality position, in which the digital and the physical states are different because each has properties that define it as different, appears to recognise this. The implications for empirical studies of internet technologies should be clear. If the digital and the physical constitute a seamless whole then perhaps deliberative discussion in the digital space is translatable to our normative models of ‘physical’ democracy. However, if there are mediated differences in the perception of these states, how appropriate is it to assume a normative relationship between digital deliberation and physical democracy?

The third and final issue for the empiricist is the role that the individual citizen plays in the deliberative process. To measure deliberation by the spread of a single tweet, or to count the likes beneath a Facebook post, is to assume that each retweet, each like, means something roughly similar to all users. Yet communication theory recognises that competing, disjunctive and coterminous discourses come together in the experience, the mind and the actions of individuals. The meaning making process is interactive – different individuals do not necessarily create meaning from the same text in the same way (Lewis, 2000, 2005). How should an empirical approach best account for individual complexity and subjectivity?

In order to address these challenges, we propose that any empirical research must satisfy the following criteria. First, it must permit some sort of comparison between media ecologies that is non context-specific. Second it must allow for the uncertain epistemological and ontological relationships between the ‘online’ and ‘offline’ worlds. Third, it must account for individual interaction between the communication technology and its users. As such, we require that our research approach allows for variation in the nature and the outcome of individual meaning making events. We do not want to impose any assumption of structural logic on individual users, and we are not interested in metrics or analytics that describe the overarching technology but tell us nothing about how individual users experience and interact with it. This means that we reject social network approaches, diffusion models and general descriptive measures (total tweet numbers, for instance, or follower accession curves).

Clearly these criteria are not easily satisfied. The solution we propose involves seeking properties of individual communication technologies that might be reasonably said to be inherent to the technology, and to affect meaning-making relevant to the socio-political sphere. Here, we are adopting Jurgenson’s notion...
of properties, which he uses to differentiate the respective digital and physical states, ahead of the oft-used affordances (e.g. Wellman et al., 2003). We use the concept of properties rather than the affordances specifically because we want to suggest that different technologies have characteristics that are independent of their interaction with humans. These properties will not necessarily determine that interaction, but they will – to some extent – help shape it. The digital and physical states, to the extent that they exist independently, arise from the communication technologies employed to mediate human-social experience. Any phenomenological difference, then, arises from differences in the properties of the techno-mediation process. As such, by focussing on the properties of the communication technology, we may be able to make empirical comparisons that are less context-specific and tell us something about any complex online/offline dualism.

Towards an Empirical Method

The assumed structural logic of the internet is that individual users are connected in horizontal networks, in which any two users (or nodes) can share information. Communication within networks becomes a function of the network structure, as messages spread between nodes. Social and computer scientists increasingly invoke epidemiology in order to explain the spread of messages in these networks (e.g. Tufekci, 2011). The appropriation of epidemiological terms – viral (virality, virals), contagion and so on – adds to an assumed epidemiological explanation for transmission patterns on the internet. This is something of a misrepresentation of epidemiology, which is concerned principally with the distribution of diseases within populations, rather than the distribution of the populations within which a disease may spread. Of course, the dynamics of the population – structure, movement – may well affect the distribution of any given transmissible disease, but rarely will it explain that disease in full; some reference to pathology is normally required, or to the specific transmission dynamics involved (Anderson & May, 1979). Otherwise all diseases would spread exactly the same way within any given population. In short, for an epidemiological analogy to be useful to us, it needs to move beyond assuming that connection equals transmission equals disease.

What we are actually interested in, of course, is not diseases but the distribution of meanings within a population or, more specifically, the distribution of different political opinions held by participants in a deliberative public sphere. When considering what properties might be suitable for empirical comparison, then, we require measures that may reasonably be thought to act on the ‘mechanics’ of the meaning-making processes that affect these distributions. Furthermore, while individual measures may be technology-specific, we require that the properties being measured refer to attributes shared by all communication technologies. In other words, if a property is to be usefully measured, it must be measurable across different forms of mediated conversation, it must apply to both the ‘online’ and ‘offline’ realms, and there must be a clear, reasonable mechanism (psychological, sociological, biological) by which it affects meaning-making.

The type of computer-enabled, electronic communication technologies discussed here are, to a great extent, features of late age modernity. The networking protocols necessary for distributed computer connections arose from the US Defense Advanced Research Projects Agency (DARPA) in the 1960s; HTML and the world wide web were only invented in the early 1990s; social media tools are barely 10 years old (Leiner et al., 2009). As such, these technologies are central features of the globalisation processes that characterise late-age modernity. This expansion and intensification of experience in modern, hyper-connected societies has prompted theorists to posit an age of space-time compression (e.g. Castells, 2010; Harvey, 1990). It seems reasonable that, if there are fundamental differences in online communication systems, then these differences arise from the disruption of the temporal and spatial properties of those technologies. According to Knorr Cetina (2009): “When interactions migrate online, for example, the interacting parties meet in time rather than in a place; for that reason, response presence becomes important, and temporal rules of coordination begin to matter” (p. 79).
For Robert Hassan, there is a fundamental disconnect between the rhythms of internet-enabled communication and the rhythms inherent to processes associated with the institutions of liberal democracy. According to Hassan those processes date back beyond the Enlightenment, and are based on older technologies, mostly associated with the written word, which cannot keep pace with the accelerated temporality of online communication (Hassan, 2012). Modern democratic institutions were born during an age of printed communication and are necessarily structured according to the temporal rhythms defined by the properties of that technology. Thus the properties of writing are constitutive with the properties of democracy. If the speed at which internet technologies operate is incompatible with these slower rhythms, then perhaps, rather than being enhanced, liberal democracy is disrupted in an age defined by rapid internet-based participatory media.

Time, Space and Twitter

In the final part of this paper, then, we use the micro-blogging service Twitter to illustrate how the temporal properties of a technology may be used to establish an empirical framework for describing that technology. Twitter is a social networking technology that allows users to publish highly structured, short-form messages, limited in length to 140 characters. Messages are displayed via a public platform where, by default, all tweets are visible to anyone who connects to the service, regardless of whether or not they are registered with Twitter. After creating an account, an individual user chooses to follow other users, which means that all messages from those users are aggregated and displayed via a timeline – effectively a live stream of messages that updates whenever a new message is published. Twitter users employ a specific lexicon to organise and direct their messages and to add functionality to the service. This lexicon includes the retweet (RT), the @ reply and the hashtag (#), which is used to identify a message as part of a broader conversation/topic discussion. When the service celebrated its sixth birthday in 2012, 140 million users were posting 340 million tweets per day (Twitter, 2012).

To demonstrate how an empirical investigation of the temporal properties of Twitter can provide useful material for a discussion of deliberative potential in the public sphere, we observed Twitter activity during a series of live broadcasts of the Australian Broadcasting Corporation (ABC) political discussion program Q&A in the run up to the 2013 federal election. During each show, we captured tweets from Twitter’s streaming application programming interface (API) containing the keyword ‘#qanda’, which is the hashtag promoted by the ABC to curate a program-relevant discussion. Some of those tweets are selected by Q&A moderators (and an algorithm) and appear on the television screen during the broadcast. During one show, the 19 August edition, which featured a debate between the incumbent Labour treasurer Chris Bowen and the Liberal shadow treasurer Joe Hockey, we downloaded 24,930 ‘#qanda’ tweets from the API. For each tweet, several data points are available, including the Twitter identity of the sender (and any intended receivers), the full text of the tweet and a timestamp, which corresponds to the second the tweet was published on the platform.

It is interesting to note that in our sample 1% of users were responsible for 10% of tweets, and the most tweets that any one user sent during the hour-long broadcast was 82. So while Twitter may offer equal opportunity for participation, the ‘#qanda’ tweet stream is dominated by relatively few voices. However, for the moment, we are interested in whether we can describe the temporal properties of Twitter, so we are principally concerned with the timestamp values. To limit the number of values we have to deal with, and to simplify the deliberative outcomes, we extracted tweets that were sent during a five-minute period during the show (5:41-10:22, see Figure 1) when Bowen and Hockey were debating the ‘surplus obsession’.

In that five-minute period, 2,024 tweets were published. That suggests that an average tweet remains at the top of the ‘#qanda’ stream for little more than a tenth of a second. Given that many tweets published in this time did not reference the deficit debate – in a coded analysis only 42% of tweets engaged fully with the subject – then any given tweet (indeed, any collection of tweets) is going to have negligible effect on a deliberative discussion, unless some sort of selection and display mechanism is available. Clearly, this
cursory overview of a somewhat artificial case study is limited, not least by the technical and practical uncertainties involved in capturing tweets from the streaming API. It is intended simply to illustrate the ease with which the temporal parameters of Twitter conversation can be explored, and to introduce the sort of questions that our conceptual framework raises for Twitter temporality. Additionally, it illustrates the inadequacy of assuming that simply sending a tweet equals transmission and reception of meaning. This is a rapid, intense, highly discursive meaning-making space. Contagion models that rely on automated identification of ‘connection’, or message exchange, risk reductive assumptions about complex mechanisms for meaning-making. The volume and rate of message flow poses acute conceptual challenges for any assumption of rational, deliberative communication.

Figure 1 – Chart showing the number of ‘#qanda’ tweets captured from the streaming API during the hour-long broadcast of Q&A on 19 August 2013. The area shaded pink corresponds to the ‘surplus obsession’ discussion.

Discussion

We have argued that an empirical investigation of deliberative political discussion on Twitter needs to address three issues. First, it must identify characteristics of that discussion that are non context-specific; second, it must account for perceived digital dualism; third, it must inform the mechanisms by which meaning is made on Twitter. To satisfy these criteria, we suggest an approach that focuses on the temporal dynamics of Twitter discussion, making use of the timestamps available for all tweets collected through the Twitter streaming API. Space-time compression is widely considered a feature of the internet, and of modernity more widely. Furthermore, there is a theoretical precedent for considering the effect of time on socio-political discourses. We have demonstrated that it is straightforward to collect timestamps for tweets related to a political discussion, and to use simple measures of publication rate to discuss the suitability of Twitter for deliberative debate. Beyond these tentative, introductory steps, however, can the timestamp measure be used to develop more sophisticated empirical approaches?

In the first instance, it raises questions about how appropriate it is to use the Twitter hashtag (e.g. #qanda) to define a community of users, or a ‘public’. This approach is fairly common in analyses of Twitter activity. It makes sense if the hashtag is used relatively rarely but, in our example, the rate at which new tweets were published suggests that it would be inappropriate to assume any causative correlation between message, reception and meaning. Additionally, while collating hashtags via the API makes it relatively easy to collect topic-relevant tweets, it does not tell us anything about how users (individuals or groups) are receiving or responding to those tweets. One solution to this, of course, is to concentrate only on retweet or @ reply conversations, ignoring all tweets that fail to illicit a response from other Twitter users. We would argue, though, that even this approach, without close reference to tweet content, ignores a great deal of the complexity involved in meaning-making in this space. It might be better, then, to use the rate
of tweet publication as a measure of discussion density (i.e. the rate of tweets published per minute or per second), on the basis of which more sophisticated analysis can be conducted. For instance, close reading techniques, such as thematic coding or discourse analysis, could be combined with density measures to investigate how meaning-making responds to the speed of tweet publication.

The discussion presented here is brief and intended, primarily, to raise questions. How are political conversations distributed on Twitter in terms of tweet publication rates? Are there systematic differences between rates and content? Can we use language tool kits to explore these differences? What is clear, however, is that any individual engaging with Twitter will be interacting with dense and rapid communication flows. Measuring the rate of those flows, and the intensity of individual interaction with them, is an important first step towards better understanding Twitter’s capacity for deliberative discussion.

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About the Authors

Philip Pond is a post graduate research student at RMIT University. His research explores empirical approaches to studying communication phenomena. His PhD investigates the temporal and spatial mechanics of Twitter conversations during acute media events. He has master degrees in journalism and epidemiology and a BA in Human Science from Oxford University.

Angelina Russo is the Associate Dean, Research and inaugural Professor of Cultural Practice at the University of Canberra. Her research focuses on the connections between media, communication and design. She is a Director of Museum3, a not for profit organisation dedicated to exploring the future of museums.

Jeff Lewis is Professor of Media and Cultural Politics at RMIT University. He is the author of *Cultural Studies* (2002, 2008), *Bali’s Silent Crisis* (2009), *Crisis in the Global Mediasphere* (2011), and *Global Media Apocalypse* (2013).