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Talking to Twitter users: Motivations behind Twitter use on the Alberta oil sands and the Northern Gateway Pipeline

by Brittany White, Heather Castleden, and Anatoliy Gruzd

Abstract

Environmental issues are being discussed through social media with increased frequency. Researchers are starting to question whether social media demonstrates a green virtual sphere: a virtual public space to discuss environmental issues that is not governed by a single authority and that anyone can access. We investigate why people use Twitter to communicate about two Canadian-based environmental issues using interviews with 10 highly engaged users. We found that they used Twitter to access news and engage in debates; however, they also raised a number of concerns: the potential for overestimating the impact of their own and others' online activities; the prospect of harassment from other users; and the possibility of being labelled an extremist. Given these findings, we conclude that in this case, Twitter only partially demonstrates the characteristics of a green virtual sphere because it increased access to information and provided a space for debate but access to the space was not equal and users were aware that discussions were likely being monitored.

Contents

Introduction

In October 2012, thousands of people from across Canada participated in protests against the development of the Alberta oil sands [1] and the Northern Gateway Pipeline [2]; the movement was called Defend Our Coast (Defend Our Coast, 2013). Throughout the movement, people used traditional forms of protest including, for example, signs, banners, and petitions; but they also used Twitter [3] to spread their message against the oil sands and the pipeline. The Defend Our Coast movement became quite prominent online; in fact, on the first day of in-person protest in Victoria, Canada, the hashtag [4] #defendourcoast became the top Canadian trend on Twitter (Defend Our Coast, 2013).

The #defendourcoast example, along with countless others (*e.g.*, Earth Hour [5] and COP15 [6]), helps to illustrate an emerging trend: people are increasingly using social media [7] applications, like Twitter, to discuss environmental issues. This trend is not entirely surprising considering that people often turn to new technologies to communicate about environmental issues, as a number of researchers have already found (see, for example, Castells, 2001; Pickerill, 2003; Horton, 2004; Dreiling, *et al.*, 2008; Mol, 2008; Greenberg and MacAulay, 2009; Lester and Hutchins, 2009; Sullivan and Xie, 2009; Segerberg and Bennett, 2011; Liu, 2011; Merry, 2011; Cox, 2013). Prior studies indicate that people are now turning to the Internet and social media to talk about environmental issues because their voices are often excluded from mainstream environmental debates (Yang and Calhoun, 2007; Liu, 2011).

This trend suggests that the Internet and social media applications may, in fact, represent a *green virtual sphere*: a virtual public space to discuss environmental issues that is not governed by a single authority and anyone can access (Habermas, 1974; Papacharissi, 2002; Torgerson, 2000, 1999; Yang and Calhoun, 2007). To date, a number of scholars have explored whether there exists a green *public* sphere (Torgerson, 2000, 1999; Yang and Calhoun, 2007) as well as a green *virtual* sphere (Liu, 2011) and indeed it would seem so; however, few have applied this concept to social media

applications. Given the growing number of people using social media to discuss environmental issues, it is important to understand whether or not these applications can serve as a green virtual sphere so users can be cognizant of both opportunities and limitations. In response, the goal of our study was to determine whether one social media application, Twitter, reflected the characteristics of a green virtual sphere in the context of two prevalent environmental issues in Canada.

In the following section, we provide a synthesis of existing literature on the use of the Internet and social media to discuss environmental issues. Next, we include an overview on the concept of the green virtual sphere. From there, we outline the method of data collection and analysis that we used to complete our study. Then, we present the results and discuss the broader implications of our findings. In the final section of the paper, we provide suggestions for potential future research and offer concluding comments.

The Internet, social media, and environmentalism

Over the past decade, researchers have found that individuals and groups — particularly environmental non-governmental organizations (ENGOs) — are increasingly turning to the Internet to communicate about environmental issues (Castells, 2001; Pickerill, 2003; Liu, 2011; Cox, 2013). For example, research suggests that most ENGOs in the United Kingdom are online, from large well-resourced organizations such as Greenpeace to small grassroots groups such as the Green Student Network (Pickerill, 2003). Likewise, the majority of Canadian ENGOs (Greenberg and MacAulay, 2009), American ENGOs (Merry, 2011) and Chinese ENGOs (Liu, 2011) — to note just a few — are all using the Internet. Broader research also indicates that individual environmentalists from around the world, not just ENGOs, use the Internet to communicate with each other and the public regarding environmental issues (Castells, 2001).

The Internet is also used in a number of different ways, ranging from exchanging information and building communities to engaging in action on environmental issues (Pickerill, 2003; Merry, 2011). ENGOs, for example, often use e-mail and Web sites to communicate with their membership, recruit new participants, and develop alliances with other organizations (Dreiling, *et al.*, 2008). ENGOs also create online communities using the Internet to help reinforce off-line relationships (Sullivan and Xie, 2009; Cox, 2013) and they even use the Internet to mobilize for collective action events (Mol, 2008; Cox, 2013). From early on, it was apparent that the Internet was "a major organizing and mobilizing tool for environmentalists around the world, raising people's consciousness about alternative ways of living, and building the political force to make it happen" [8].

More recently, researchers have found that people are using social media applications, like Facebook [9] and Twitter, to discuss environmental issues. Existing research indicates that Facebook is being used by ENGOs to create an interactive space for dialogue (Bortree and Seltzer, 2009) and Twitter is being used to promote awareness about environmental issues, such as climate change, as was illustrated during the Earth Hour campaign in Australia (Cheong and Lee, 2010). Twitter has also been used to organize large collective action events, such as the protests that took place during the 2009 United Nations Climate Summit in Copenhagen (Segerberg and Bennett, 2011). Within this area of research, scholars have also found that examining ENGOs' social media use can help to identify effective and ineffective strategies to engage with an organization's membership (Greenberg and MacAulay, 2009).

While there is a growing body of work that examines the use of the Internet and social media applications to communicate about environmental issues (Greenberg and MacAulay, 2009; Cheong and Lee, 2010; Segerberg and Bennett, 2011), there has been scant research on the *motivations* for using these technologies (a notable example is Liu, 2011). Moreover, the majority of the research that does exist tends to examine only ENGOs (Pickerill, 2003; Greenberg and MacAulay, 2009; Bortree and Seltzer, 2009; Sullivan and Xie, 2009), and as a result, the focus has been limited to the organizational level, rather than specific individual engagement. This begs the question of whether these applications could reflect the characteristics of a relatively new concept: the green virtual sphere.

The green virtual sphere

While the conceptualization of a *green virtual sphere* is relatively new in the academy, a number of scholars have already suggested related concepts, such as the idea that the Internet and social media applications may offer a new public sphere — a virtual sphere — by enhancing communicative action and participatory democracy (Pickerill, 2003; Dahlgren, 2005; Papacharissi, 2009; Hands, 2011; Shirky, 2011). In this section, we examine three concepts that provide the main foundation for how we understand the discourse emerging around how the green virtual sphere is being conceptualized, which include: the public sphere (Habermas, 1974), the virtual sphere (Papacharissi, 2002; Salter, 2003; Berdal, 2004;

Langman, 2005; Dahlgren, 2005; Frangonikolopoulos, 2012), and the green public sphere (Torgerson, 2000, 1999; Yang and Calhoun, 2007; Liu, 2011).

The public sphere

The first concept, the public sphere, was originally developed by Jürgen Habermas. According to Habermas (1964) a public sphere is:

> A realm of our social life in which something approaching public opinion can be formed. Access is granted to all citizens. A portion of the public sphere comes into being in every conversation in which private individuals assemble to form a public body. They then behave neither like businesses or professional people transacting private affairs, nor like members of a constitutional order subject to the legal constraints of a state bureaucracy. Citizens behave as a public body when they confer in an unrestricted fashion — that is, with the guarantee of freedom of assembly and association and the freedom to express and publish their opinions — about matters of general interest. [10]

Habermas argued that the public sphere first emerged out of the bourgeois coffee houses during the Industrial Revolution where free men debated about the ruling authority (Habermas, 1974). Over time, the media — newspapers and magazines, radio, and television — became the voice for the public sphere (Habermas, 1974). However, the media quickly became more interested in making a profit, rather than providing social and political commentary (Habermas, 1974). Consequently, the media increasingly fell under the control of big business, and the public sphere was transformed from a forum for democratic debate into a site for manipulation by corporate interests (Habermas, 1974).

The virtual sphere

Building on Habermas work, Zizi Papacharissi extends the concept of the public sphere to the Internet (2009). She argues that the Internet has the potential to be the new public sphere for two reasons. First, the Internet has great data storage and retrieval capabilities, which infuses political discussions with information that was not previously available (Papacharissi, 2002). Second, the Internet enables discussions between people from far sides of the globe who are from diverse backgrounds (Papacharissi, 2002). This concept of the virtual sphere has been applied to a number of cases, including Web forums (Berdal, 2004), online social movements (Salter, 2003; Langman, 2005), and the Internet more broadly (Dahlgren, 2005). Across these studies, a common theme emerged: the Internet has the potential to serve as a virtual sphere (Salter, 2003; Berdal, 2004; Langman, 2005; Papacharissi, 2009) because it can: (1) increase the amount of information that is available to people, (2) include more people in discussions, and (3) provide a new space for deliberation.

Papacharissi (and others) have acknowledged, however, that the Internet as a virtual sphere is not without its limitations. First, people may not utilize the Internet as a virtual sphere: “online technologies render participation in the political sphere more convenient but do not guarantee it” [11]. It is also a challenge to foster genuine dialogue because communication tends to be one-way and it can be difficult to gauge the impact of a message sent through Twitter or Facebook (Bortree and Seltzer, 2009; Greenberg and MacAulay, 2009). This limitation could result in “slacktivism” which is the over-estimation of the impact of online activities (Morozov, 2009; Gladwell, 2010). Second, the virtual sphere may become/is becoming commercialized (Papacharissi, 2002). As such, the virtual sphere is being influenced by corporate interests. Facebook, Twitter and YouTube [12], for example, all include advertisements. Finally, access to the Internet and required technology — such as computers, laptops, tablets, and smartphones — is not universal (Papacharissi, 2002; Greenberg and MacAulay, 2009; Frangonikolopoulos, 2012); thus, in many places, only well-resourced individuals and groups can access and use these technologies (Merry, 2011).

The green public sphere

The final concept that we include in our trifecta is the green public sphere. The green public sphere — originally proposed by Torgerson (1999) — is an issue-specific public sphere that fosters political debates and pluralistic views about environmental issues. It is a “space for discussion ... governed by no single direction, but displays an interest in plurality of opinions however inconvenient and troubling they might be. Of course the green public sphere cannot be something that is altogether boundless: even meaningful disagreements require certain limits and coherence.” However, there is an inclination towards inclusion [13]. Researchers suggest that citizens and ENGOs have started turning to mass media, the Internet, and alternative media to communicate about environmental issues because their voices were often excluded from environmental debates (Yang and Calhoun, 2007; Liu, 2011). This shift has resulted in the emergence of a green public sphere (Yang and Calhoun, 2007).

Combining these three related concepts — the public sphere, the virtual sphere, and the green public sphere — we conceptualize a green virtual sphere. For the purpose of our study, we define a green virtual sphere as: (1) a virtual public space for discussion, (2) in which access is granted to all citizens; (3) the space is not governed by a single authority; (4) but rather, the public is able to confer in an unrestricted fashion to debate about issues of the environment. Using this

conceptualization, we aim to understand whether social media applications can demonstrate the characteristics of a green virtual sphere by investigating Twitter discussions on two pressing environmental issues in Canada — the Alberta oil sands and the Northern Gateway Pipeline. Below, we provide details on the environmental issues and the social media application that we selected for our study.

Study context

The oil sands are located in north-eastern Alberta, Canada and are estimated to be the third largest oil reserves in the world (Alberta Government, 2013). The development of the oil sands is expanding to provide oil for growing markets in China and the United States, and as extraction increases, new pipelines are needed to transport the oil. In response to the increasing demand, the energy company Enbridge proposed a 7.9 billion dollar project in 2010 called the Northern Gateway Pipeline (Gateway Panel, 2014). The federal government approved the pipeline in June 2014, and subject to a number of conditions, it is expected to include the construction of two 1,200 km. pipelines from Bruderheim, Alberta to Kitimat, British Columbia and the construction and operation of a marine terminal (Gateway Panel, 2014) (see Figure 1).

Figure 1: Enbridge's proposed route for the Northern Gateway Pipeline project (Enbridge, 2013). © Enbridge. Image reproduced courtesy of Northern Gateway Pipelines Limited Partnership.

We selected these two inter-related issues because they reflect one of the challenges associated with environmental issues: limited access to public consultation. In 2012, the Natural Resource Minister for Canada, Joe Oliver, released an open letter to the Canadian public stating that environmentalists and other radical groups were trying to commandeer the public consultation process on the Northern Gateway Pipeline (Payton, 2012); specifically, he wrote: "These groups threaten to hijack our regulatory system to achieve their radical ideological agenda. They seek to exploit any loophole they can find, stacking public hearings with bodies to ensure that delays kill good projects" (Natural Resources Canada, 2012). The public hearings on the Northern Gateway Pipeline did indeed fill up quickly with people wanting to voice their opinions; the federal government's response was not to make room for such democratic discourse but instead to institute a 15-month limit for oral public hearings (O'Neil, 2013). This situation created an opportunity — people turned to alternative spaces, including social media, to voice their opinions. Thus, we selected Twitter as the social media application for our study because it provides a unique window into spaces of contention given the structure of the online conversations (Segerberg and Bennett, 2011).

Twitter users often include hashtags that can help to facilitate a global discussion on a topic (Lotan, *et al.*, 2011); researchers can then locate and study specific topics in the virtual public sphere (Segerberg and Bennett, 2011). In other words, by examining a hashtag, researchers have the opportunity to focus on a particular debate or topic. We also selected Twitter because it is a widely used application, (*i.e.*, it has over 500 million users), and it is primarily a public platform, meaning that the information posted is available to the public. Although it is a public platform, it should be noted that

some users have private accounts and as a result, their tweets were not publicly available and were not included in this study.

Methodology

After selecting our case studies, we employed semi-structured qualitative interviews with well-connected users who used the hashtag #tarsands [14]. We selected this hashtag because: it was connected to both of the issues; it was the most frequently used hashtag on these issues; and it provided significant overlap with over relevant hashtags (*e.g.*, #oilsands, #pipeline, and #NorthernGateway). To identify and recruit participants, we first collected tweets using a program called Netlytic. The program automatically collected tweets with the #tarsands hashtag from 24 January 2012 to 24 February 2012. In total, we collected 12,815 tweets during this one-month time period. Then, from the tweets, we identified usernames for potential interview participants. Although this approach was effective, there were two limitations. First, the program that we used could only collect 100 tweets per hour; as a result, some of the relevant tweets may have been excluded (although this seldom was the case since most days had less than 300 tweets). Second, usernames did not necessarily represent individuals; they could also represent organizations' Twitter accounts. When this was the case amongst our recruited participants, the interview was conducted with the individual who used the account within a particular organization.

Using purposeful sampling, we identified potential interview participants from among those who were well-connected and tweeted using the #tarsands hashtag; this approach is known as network ethnography (Howard, 2002). We focused on well-connected users using a measurement known as total degree centrality [15]. Initially, we aimed to conduct between 10 and 15 interviews, to achieve a sufficient data set (as suggested in Kvale and Brinkmann, 2009). We contacted the top 15 most well-connected users to participate in our study, of which seven agreed to participate. Since we did not reach our initial target and since we had not achieved data saturation after conducting the first seven interviews — meaning that new themes were still emerging (Kvale and Brinkman, 2009) — we contacted the next eight users on our list; three agreed to be interviewed. In total, we interviewed 10 Twitter users. A summary of the participants is included below (see Table 1).

Table 1: Interview participant characteristics.

Participant	Country of residence	Gender	Individual/organization
1	Canada	Female	Individual
2	Canada	Male	Individual
3	United Kingdom	Female	Organization
4	Canada	Male	Organization
5	United Kingdom	Female	Organization
6	Canada	Male	Individual
7	Canada	Male	Organization
8	Canada	Male	Individual
9	Canada	Female	Individual
10	Canada	Female	Individual

Where possible, we contacted potential interview participants via e-mail, however, not all users include their contact information on Twitter; thus, in some cases, we used direct messaging, which is a function available through Twitter, or we tweeted to users in order to invite them to participate in our study. Once participants gave their consent to participate in an interview, we scheduled phone interviews instead of face-to-face interviews due largely to the geographic distance of our participants but also limited resources (Sturges and Hanrahan, 2004). Interviews lasted between 30 and 80 minutes, during which time participants were asked 20 questions that explored why they used Twitter to discuss the oil sands and the pipeline. Interview data were transcribed into Microsoft Word™ and then exported into NVivo10™ for data analysis.

Our data were subjected to a thematic analysis. This process involved analysing the interview data line by line to identify emergent themes regarding why participants used Twitter to discuss the oil sands and pipeline. We coded the interview data based on patterns that were evident within the data set and then compared these patterns with the study purpose and literature. First, we coded the transcripts based on a list of codes that were derived from the literature and identified during

the interview process; this approach is known as a start list and relies on deductive analysis (Miles and Huberman, 1994). Next, we analysed the transcripts to identify any themes that did not fall into the initial codes, known as inductive coding (Miles and Huberman, 1994). Data were also subjected to multiple rounds of coding where we constantly reviewed our nodes and condensed them as needed to eliminate redundancies and refine our results into major themes with several sub-themes, described below.

Motivations for using Twitter

From the interviews, we found two main motivations for using Twitter: accessing news and engaging in debate. Within accessing news, there were three sub-themes: accessing news beyond the mainstream media; receiving news about events, such as protests; and, changing the power relationship between the consumers and producers of news. We also found that participants used Twitter to engage in debates with people from diverse regions, often supported by relevant information. From the interviews, we also identified a number of concerns that participants had regarding the use of Twitter, including: the potential emergence of slacktivism (*i.e.*, people over-estimating online action), the prospect of harassment from other users, and the possibility of being labelled as an extremist. We examine each of these findings in more detail in the following section, starting with participants' motivations for using Twitter on the oil sands and pipeline.

1. Accessing news

The most prominent motivation that we identified for using Twitter was to access news. Specifically, nine out of ten interview participants stated that they used the application to get news about the oil sands and pipeline. In addition, a number of interview participants noted that they acted as information sources on Twitter by providing and synthesizing news on these issues. For example, one participant stated that their tweets on the pipeline provided a good overview of what has been written in the news: "my tweets on the Northern Gateway Pipeline are pretty comprehensive about what has been said about it in Canadian and some American news. So you have got this huge depository of chronicles, much of what has been written since the issue really started to get front and centre" (Participant 6).

Interestingly, participants also noted that they used Twitter to find alternative news sources in addition to mainstream media on these environmental issues: "I get served different information than what you are getting through news sites" (Participant 1) and Twitter is: "a really good way to get past the mainstream press and messaging that's out there" (Participant 3). Participants commented that it was important to get news from a variety of sources to acquire a better, well-rounded understanding of the oil sands and the pipeline; Twitter enabled them to do this:

> Twitter is a place where I can get information about the Northern Gateway Pipeline from the pro-pipeline, the anti-pipeline and then individuals. I can also get it from engineering companies, I can get it from people, I can get it from many different sources. It's a parallel, flat plane where I can pick and choose what I want to consume and as far as the Northern Gateway Pipeline and Twitter I think that you are going to get both sides of the story ... you are going to get different perspectives, you're going to see the far left, you are going to see the far right and then you can sort of decide for yourself if the Northern Gateway Pipeline is safe or not (Participant 8).

Participants also mentioned that they used Twitter to access and share details about events: "the main thing [sic] is that I will talk about the protest movements out there, what people are doing ... any sort of news on any public gathering" (Participant 3). The application also provided people with accounts of protest events from people who were on the ground: "just hearing their eyewitness statements from people that are directly out there on the ground and it's something you never would have had the opportunity, not in an immediate way" (Participant 5).

Another sub-theme related to media that arose from the interviews was the changing power relationship between consumers (the public) and producers (mainstream media) of news. For example, two participants suggested that journalists used Twitter to identify emerging stories: "journalists pick up different stories that start to get circulated [on Twitter], and I think you can see a good correlation between some of the tweets and then when we see bigger media pick up of the issues" (Participant 7). While another participant commented that: "producers tend to look at what's tweeting heavily in the morning and if there is something going nuts on [Twitter] ... or something everybody is tweeting about some particular thing or there is a lot of tweets in #cdnpoli Twitter feed, it often makes it into an item on *Power and Politics*" [16] (Participant 2). Thus, it was suggested by participants that journalists and producers are "ferreting out the news by what are people tweeting about today" (Participant 2). This sub-theme demonstrated that not only were participants going to Twitter for their news, but journalists were using it as a source for news as well.

2. Engaging in debate

The second key motivation for using Twitter was to engage in debate on environmental issues. We found that six out of ten participants said that they used the application to do so: Twitter is "a world stage debate. It's an open floor ... an honest discourse. An honest social discourse" (Participant 8). In particular, participants suggested that Twitter plays a role in fostering public dialogue: "It's not just about moving oil, it involves a whole lot of different issues, environmental, economic, it affects our future resource development ... I think it's important to have a debate on it, it's important to have dialogue, it's important to keep getting people talking and thinking about things and Twitter is a way of doing that" (Participant 9). In fact, one participant even indicated that the online debate was addressing an important democratic deficit within the Canadian context: "Democracy is about debate. You can't have democracy without debate and our Parliament is failing terribly, and I think that Twitter and social media are fulfilling a very important void here" (Participant 6).

Interview participants were not just using Twitter to participate in environmental debates, but they were also using it to include information to support their arguments; one participant described it as "intelligent" dialogue:

> I often compare [Twitter] to a cocktail party. However, it's so much cooler than a cocktail party. The reason that it's cooler is because if I was having a conversation with you at a cocktail party, you would say something and I would just kind of nod my head and you know get what you were talking about, but I wouldn't be able to press that hyperlink and delve behind what you were saying and then come back with a reply ... see you are able to have much more intelligent conversations because you can say something and I can say oh that's kind of interesting I am going to look into that, so I go and look into it and then, after I am informed, I respond. And so, that has much more depth than what you would have at a cocktail party. Unless at a cocktail party you were able to just pull the research papers out of your pocket (Participant 1).

In this way, people can use Twitter to reference and justify their online arguments in a similar way to how an academic might cite a book or an article in a journal publication.

In addition to having greater access to information, we also found that debates about the oil sands and pipeline on Twitter were global in nature. Two of the interview participants, for example, were based in the United Kingdom and noted that the social media application allowed them to participate in debates about these "Canadian issues" even though they were not located in Canada. Twitter allowed them to connect to NGOs as well as individuals in Canada, without having to leave the U.K. Another participant, a rural Canadian, commented that despite their physical isolation, they were able to participate in protest via the virtual sphere: "I think that Twitter is important for the rural dwellers, the small town dwellers to be involved in issues that you can't get out on the street and protest ... it connects you to the political sphere and connects you to the like-minded individuals and you can be part of a movement without moving to Toronto ... or Ottawa or actually traveling there" (Participant 2). It is well-established that negative environmental impacts of large-scale resource extraction and development typically impact those closest to the site but they also affect the world community (*e.g.*, nonpoint source pollution); Twitter provided a space for those not geographically close to the oil sands or pipeline to create and participate in a much more globalized debate.

Concerns regarding the use of Twitter

Participants identified a number of concerns regarding the use of Twitter with respect to discussing the oil sands and the pipeline; these included: (1) the potential emergence of slacktivism; (2) the prospect of harassment from other users; and finally, (3) the possibility of being labelled an extremist by the Canadian government as a result of publicly tweeting on a contentious issue. Each of these three concerns is discussed in turn below.

1. Emergence of slacktivism

Participants indicated concern about the emergence of slacktivism: Twitter "makes you feel like you are maybe doing more about an issue than you actually are ... I mean it's online, it's messaging, it's information. But that in itself isn't going to change anything unless people are motivated by that information to do something with it, so, it"s only kind of the first step in that way" (Participant 3). Another participant emphasized that the main value of Twitter is to exchange information, rather than to engage in action: "on the one hand [Twitter is] the greatest tool in the world, but on the other hand, if you are dealing with apathetic users, nothing has changed. There's no action, they may learn something, but if there's no action involved with knowledge it may as well be nothing" (Participant 8). Given this, many participants qualified their use of Twitter as only one of many virtual and off-line mechanisms they use to engage with others on these and other environmental issues.

2. Harassment from other Twitter users

Harassment concerns associated with the use of Twitter were also mentioned during the interviews. Half of the interview participants stated that harassment, particularly from trolls [17], was an issue that they experienced when tweeting using the #tarsands hashtag. Participants noted that trolls are common amongst Twitter discussions on the oil sands and the pipeline: there are "a few prominent trolls, I would say, who are out there looking ... to pick a fight" (Participant 2). Another participant commented that they frequently dealt with such instigators: "my personal experience about tweeting about oil sands, the Northern Gateway Pipeline and Northern Gateway Pipeline issues on Twitter was interesting, most of the responses would be very negative, harassing, just a bunch of trolls ... I know a lot of people who got off Twitter because of that" (Participant 9). While harassment was seen as an off-putting aspect of Twitter, these well-connected participants indicated it had not suppressed their use of the medium to continue to inform and engage in the virtual sphere.

3. Being labelled an extremist

The final key concern that emerged from the interviews was in regards to publicly tweeting on controversial issues and subsequently being seen as an extremist. While not all, three of the participants expressed worry about their tweeting on the oil sands and pipeline:

> I think it's a risk to express your opinion on anything contentious, publicly. Because you never know how people are going to react. I think that the Northern Gateway Pipeline unfortunately has become a very, very contentious issue with a lot of people and if you put yourself out there with an opinion either pro, negative or even in the middle, you are going to be on the radar of some people who are very passionate about that issue one way or another, and might try to engage you in a way that you don't want to be engaged (Participant 9).

Specifically, these participants expressed concern about the conservative federal government's monitoring of their activities:

> The Harper government, of course, is a strong proponent of the pipeline and they have already labelled people that oppose the pipeline as extremists, even gone so far as terrorists, and put environmental groups in the same category on some government watch documents and so I think that coupled with the fact they have just started a terrorism task force here in Alberta focusing on the oil sands and energy issues is fairly concerning about that the [sic] perhaps that activity will be used to try to target people who are doing work that is, I believe, in the public interest, a hundred percent legitimate and legal but use that to potentially identify networks and try and unjustly attack people who are innocent (Participant 7).

Another participant echoed this concern, and mentioned that there was a risk of being labelled an enemy of Canada as a result of tweeting against the oil sands and pipeline using the #tarsands hashtag on Twitter:

> Confrontation with intransigent people who will call you an unpatriotic foreign funded radical extremist enemy of Canada ... it does hurt to be called [an] enemy of Canada to me. I find it to be quite hurtful and when cabinet ministers say that if you are against the pipeline you are an enemy of Canada, that, I find [it] hits me in the gut I am not kidding ... I find it personally hurtful. But that's the risk (Participant 2).

Similar to their concerns about harassment, participants recognized the risks of being under governmental surveillance associated with using the virtual sphere to engage in public dialogue on these environmental issues, but it did not prevent them from doing so.

Discussion

Our research examined the motivations for using Twitter to communicate on the Alberta oil sands and the Northern Gateway Pipeline to determine whether the use of this social media application would reflect the characteristics of a green virtual sphere (*i.e.*, a virtual public space for discussion, in which access is granted to all citizens that is not governed by a single authority but instead allows the public to confer in an unrestricted fashion to debate about environmental issues). Based on our results, we found that Twitter use on the Alberta oil sands and the Northern Gateway Pipeline, using the #tarsands hashtags, only partially reflected the characteristics of a green virtual sphere.

In this case, Twitter was indeed a virtual public space in that users employed it to access news. This finding resonates with others who have also noted that Twitter is used to access news (*e.g.*, Java, *et al.*, 2007; Kwak, *et al.*, 2010). This finding

also reflects a characteristic of the green virtual sphere because participants were able to access and mediate their own messages, rather than having to go through the mainstream media (Pickerill, 2003). We also found that participants used Twitter to engage in debate, demonstrating a space for discussion. This is surprising, given that previous studies have shown that it can actually be quite difficult to foster two-way dialogue on social media regarding environmental issues (Bortree and Seltzer, 2009; Greenberg and MacAulay, 2009). As a result, this finding also reflects a characteristic of the green virtual sphere because it suggests that Twitter was being used for dialogue.

Twitter use on the oil sands and pipeline had its limitations though, regarding its applicability as a green virtual sphere. For example, although anyone can create a Twitter account (if they have access to the Internet) we found that interview participants indicated that most of the people tweeting on the oil sands and pipeline using the hashtag #tarsands were opponents; one participant even suggested that, based on their anecdotal experience, as much as 90 percent of people tweeting on these issues were opponents. Given this, they also had some concerns regarding the use of Twitter for these and other environmental issues. For example, it was not surprising that there was a concern regarding slacktivism, especially in light of the fact that previous studies have also indicated the possibility of people over-estimating their online activities (Morozov, 2009; Gladwell, 2010). While previous studies have found that ENGOs had some concern about the government monitoring their online discussions and activities (see Pickerill, 2003; Liu, 2011), participants in our case study were not just concerned about monitoring but about being labelled as “extremists”. Given these concerns, there are some notable limitations of Twitter demonstrating the characteristics of a green virtual sphere because participants were worried about publicly tweeting on the oil sands and pipeline.

There are a number of implications given the concerns highlighted by interview participants. First, since there were concerns about the emergence of slacktivism, participants indicated that they and others should not rely on Twitter alone to communicate about the oil sands and pipeline — or other environmental issues. They could, for example, use other social media applications, like Facebook and YouTube, as well as Web sites, e-mail, print, telephone and face-to-face engagement (Pickerill, 2003).

Second, users could consider employing different hashtags in their tweets on the oil sands and pipeline. The phrase “tar sands” is, in reality, pejorative (as compared to the phrase “oil sands”) and as such, it may draw attention from trolls as well as government surveillance. A number of participants noted that they already used other hashtags to tweet about the oil sands and pipeline, and by including other hashtags, they would also be extending the reach of their tweets.

Third, because Twitter is a public platform, it is open to government surveillance but rather than the government simply monitoring discussions, there is an opportunity for the government to engage with users who discuss the oil sands and pipeline. For example, in New Zealand, the government used social media applications (specifically a wiki) to conduct a public consultation regarding the Police Act (McCardle and Webb, 2010). New Zealand citizens had the opportunity to access a public wiki and input their comments into the existing Police Act, helping to write the new act. In the future, other governments — including the Government of Canada — could potentially use social media applications to engage in dialogue.

Limitations

Our study contributes to a growing body of research to understand why people use social media to communicate about environmental issues and to determine whether online applications can serve as a green virtual sphere. While our qualitative study focused on two inter-related Canadian issues, it was not our intention to generalize our results to broader issues or different geographic regions. That notwithstanding, we identified two key limitations of our study that should be addressed here.

First, our study focused particularly on people who were well-connected on the oil sands and the pipeline. In other words, we interviewed users who demonstrated a high total degree centrality and as a result, we did not include participants who were not as well-connected or only read tweets about these issues. This means that less connected users may have different motivations regarding why they use Twitter to communicate on the oil sands and pipeline.

Second, we focused on only one hashtag in our study, #tarsands, and as a result, tweets that did not include this hashtag but did discuss the oil sands and the pipeline were not included. As noted above, “tar sands” is considered a pejorative phrase, and as such, our sample of interview participants tended to include users who were opposed to the oil sands and the pipeline (nine out of ten participants were opponents); however, by focusing on the hashtag #tarsands, we were also able to uncover different concerns from users, such as the federal government labelling environmentalists as extremists.

Potential future research directions

Our study contributes to an emerging body of literature to understand the motivations behind people’s use of social media to communicate about environmental issues, but there is room for further investigation. One suggestion is provided here, using our study results as a point of departure. Given that our findings pointed to the ability for public consultation on environmental issues through social media applications, future studies could examine the potential integration of online discussions with traditional methods of public consultation by investigating questions that consider whether online

discussions can be incorporated as a form of public consultation on environmental issues and if so, how might this be achieved.

Conclusion

Our study sought to find whether Twitter has the characteristics of a green virtual sphere; in this case, it only partially does; it increased access to information and provided a space for debate but access to the space was not equal and discussions may be monitored. The implications of our findings suggest that the use of social media has the potential to become a green virtual sphere, should there be mechanisms to reduce some of the concerns identified. Beyond this, Twitter and other applications may become a new consultation strategy to discuss environmental issues in advance of decision-making. As a growing number of people turn to social media to communicate about environmental issues, governments have an opportunity to join the conversation and even promote a new method of consultation. In Canada's case, the question is will the federal government decide to engage in the conversation or continue to monitor social media channels and label vocal environmental critics as enemies of the state? FM

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Notes

1. The oil sands are a mixture of sand, water, clay and a type of petroleum called bitumen. In Canada, the majority of the oil sands are located in Alberta (Alberta Government, 2013).

2. The Northern Gateway Pipeline is an oil sands project proposed by a Canadian-based multinational company, Enbridge, which involves the construction of two oil sands pipelines and a marine terminal (Gateway Panel, 2014).

3. Twitter is a micro-blogging site developed to allow users to share updates by posting messages, known as tweets. Tweets are messages of no more than 140 characters and often include links to Web sites, images, or videos (Twitter, 2014).

4. A hashtag occurs when a Twitter user includes a # symbol in front of a word to mark a keyword in a tweet. Clicking on a hashtagged word shows other tweets marked with that keyword (Twitter, 2014).

5. The Earth Hour campaign is an annual event asking people to turn off their lights for one hour to reduce energy consumption and raise awareness about climate change (Cheong and Lee, 2010).

6. COP15 refers to the fifteenth United Nations Conference of the Parties on Climate Change which took place in Copenhagen, Denmark in December 2009 (Segerberg and Bennett, 2011). Protestors used Twitter to organize protest events leading up to the meeting (Segerberg and Bennett, 2011).

7. Social media are Internet-based applications that allow for the creation and exchange of user-generated content, including: blogs, collaborative projects, social networking sites, content communities, virtual social worlds, and virtual game worlds (Kaplan and Haenlein, 2010).

8. Castells, 2001, p. 280.

9. Facebook is a social networking site launched in 2004 that connects "friends" using messages, photos, and videos (Facebook, 2014).

10. Habermas, 1974, p. 49.

11. Papacharissi, 2002, p. 15.

12. YouTube is a video-sharing site established in 2006 that enables users to upload, view and share videos (YouTube, 2014).

13. Torgerson, 2000, p. 7.

14. This study was reviewed and approved by Dalhousie University Research Ethics Board.

15. Degree centrality is a common measurement used in social network analysis to determine the number of ties that a node has to other nodes (Scott, 2000). In-degree centrality is how many ties a node receives, while out-degree is how many ties a node sends out, and finally, total-degree is a combination of in-degree and out-degree centrality (Scott, 2000).

16. *Power and Politics* is a nightly political talk show that airs on the Canadian Broadcasting Corporation.

17. Trolls are (typically anonymous) individuals who attack people online.

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