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Author(s)	Liu, HK
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Research and Evaluation

Exploring Online Engagement in Public Policy Consultation: The Crowd or the Few?

Helen K. Liu

The University of Hong Kong

Governments are increasingly adopting online platforms to engage the public and allow a broad and diverse group of citizens to participate in the planning of government policies. To understand the role of crowds in the online public policy process, we analyse participant contributions over time in two crowd-based policy processes, the Future Melbourne wiki and the Open Government Dialogue. Although past evaluations have shown the significance of public consultations by expanding the engaged population within a short period of time, our empirical case studies suggest that a small number of participants contribute a disproportionate share of ideas and opinions. We discuss the implications of our initial examination for the future design of engagement platforms.

Key words: *online engagement, public engagement, online platform*

Governments are increasingly adopting online platforms to engage the public and allow a broad and diverse group of citizens to participate in the planning of government policies. However, some are concerned that using online platforms for public engagement may worsen the uneven representation in the public consultation process because of administrative design and the information selection process (Hindman 2008). Many people cannot access the Internet, do not know how to voice their opinions online, or simply have no interest in expressing their views. A more fundamental question is whether the ideas and opinions generated by online crowds on public policy consultation platforms come from a majority of contributors or from a small percentage of elite contributors.

Three streams of literature have addressed the debate on the crowds or the few. First, Lippmann (1922) argued that the public is more likely to be manipulated by self-interested elites because of information and attention deficiency. By contrast, Dewey (1927) posited that technology and media can help citizens communicate better and solve problems that have direct consequences in their lives. Sec-

ond, the public engagement literature highlights the dilemmas of inclusion in direct citizen participation (Hong 2015; Roberts 2008). Third, social media studies have discussed how the design of the Internet platform, including features such as ranking systems, might affect users' attention and information selection and, hence, their ability to participate and contribute online (Duan et al. 2009). These debates between the few and the crowd raise an important issue for scholars to explore: patterns of contributions from the crowd in public policy consultation settings.

This paper seeks to determine whether the ideas submitted by the crowd come from a large portion of the user base or from only a small percentage of contributors; this work then examines variations in the contribution patterns of the crowd and the few. This paper empirically examines two online public engagement cases: the Open Government Dialogue and the Future Melbourne wiki. The paper uses two panel datasets based on participants' daily contributions and interactions (such as commenting on ideas) on these platforms. To understand the patterns of contribution for both the few and

the crowd, this work adopts the analytical approach of Kittur et al. (2007) and distinguishes and presents the activities of two types of actors – repeat contributors and one-time contributors – in trend graphs.

Literature Review

The Exchange between Lippmann and Dewey: Capacity

Lippmann (1922) and Dewey (1927) presented two perspectives that addressed the capacity in which the public can or should be included in solving public problems; these perspectives continue to be a source of discussion in the literature (e.g. Box 2002; Malin 2011; Jacobs 2014). Lippmann (1922) argued that the public cannot resolve problems because it lacks the competence to obtain the necessary information and the attention needed to make decisions on public issues. Lippmann (1922) observed that people often rely on secondary information sources, and this tendency creates an opportunity for experts and opinion leaders to guide public opinion (Box 2002). Furthermore, Lippmann (1922) expressed concern that even when the mass media includes more diverse opinions, experts could use their resources to manipulate the public's attention on certain issues. Therefore, Lippmann (1922) concluded that only the technocratic elites who show concern about policy issues and possess the necessary knowledge are capable of addressing those issues, thus shifting the focus of effective democratic governance from citizens to elites (Jacobs 2014).

Dewey (1927), by contrast, argued that citizens can and should resolve public problems that directly affect their lives. Dewey acknowledged the concerns of information accessibility mentioned by Lippmann (1922), but he posited that new technology and media could increase the public's capacity to participate in public deliberation (Box 2002; Malin 2011). Dewey (1927:219) claimed that the public would not be manipulated by the few if discussion of public affairs can be generated at the community level through discussion among commu-

nity members. However, such a view contrasts with Lippmann's (1922) observation of a conflict between open communication and attention focus because more information from an open communication channel might reduce the public's attention to a specific opinion or topic (Malin 2011). Nevertheless, Dewey's strong belief in reforming public life to create an environment that fosters informed and engaged citizens constitutes an important foundation for scholars studying direct citizen engagement (Jacobs 2014).

The Debate on Direct Citizen Engagement: Inclusion

Scholars such as Barber (1984) and Pateman (1970) are optimistic about direct citizen engagement because they believe that the ability of technology to broadcast information more efficiently and cost-effectively has allowed citizens to be included in the policy-making process. Existing direct citizen engagement studies have shown that wider and more representative inclusion of direct engagement can emerge from the use of technology (Hong 2015), better planning (Fung 2015), and a deeper understanding of the context of engagement (Nabatchi and Amsler 2014). Thus, many scholars remain hopeful for direct participation despite the barriers and challenges of including more citizens (Boswell et al. 2014; Roberts 2008). For instance, in a recent study of participatory budgets, Hong (2015) found that the inclusion of more participants through information and communication technologies may encourage the wisdom of crowds because it allows greater information access for participating citizens. Other recent studies have found that online engagement can facilitate the participation of distinct groups, such as youth and women in the United States (Oser et al. 2013) and youth at risk of social exclusion in Australia (Notley 2009).

Nevertheless, political science studies have criticized this view, noting that it is not possible for every citizen to participate in every public decision because of the limited knowledge and lack of motivation (Dahl 1989; John 2009) and other barriers to inclusion, such as

the rules of public participation (King et al. 1998), self-censorship in a polarized environment (Hayes et al. 2006), participants' negative views of authority, poor awareness of participation opportunities, and social inclusion issues (Lowndes et al. 2001).

Thus, Urbinati and Warren (2008) argued that adopting online platforms for direct citizen engagement might create misconceptions of greater inclusion, and they claimed that citizen representation through online platforms was misunderstood as direct democracy, noting that 'only a tiny percentage of citizens are actively involved in any given venue' (p. 405). Additionally, Hindman (2008) observed that emerging elites are replacing traditional elites in the online political world. The problem is that the new elites emerging from the Internet are not selected through public elections. Often, new elites are determined by the nature of the Web. A popular idea may draw the attention of other participants because it is a good idea or simply because it is featured on a popular website.

Although Urbinati and Warren (2008) and Hindman (2008) offered sound critiques of online engagement in online platforms, empirical evidence is lacking. To further understand the behaviour of online contributors on public policy consultation platforms, we consider social media studies that focus on analysing patterns of voluntary online contribution on online platforms.

The Crowd versus the Few: Design

Social media studies examining online contributions on Amazon, YouTube, Facebook, and Wikipedia focus on various designs for harnessing the capacity of the crowd, known as the 'wisdom of crowds' (Surowiecki 2005), and reducing the gatekeeper problem on social media platforms (Frank and Cook 2010). Studies of contribution patterns often focus on two types: user-generated platforms (e.g. Wikipedia) and forums with ranking systems (e.g. TripAdvisor).

The debate on the development of Wikipedia serves as a good illustration of how technology improvement can increase the inclusion

and contribution of crowds. In 2005, Jimmy Wales, the cofounder of Wikipedia, announced that only 2.5% of the site's registered users contributed approximately 50% of the edits on the site (Swartz 2006). Wales challenged the notion of the crowd, noting that the work on Wikipedia has largely depended on a small group of contributors, especially during the first 5 years of its existence. In response to criticism of the notion of the crowd, Kittur et al. (2007), in their study of Wikipedia, spoke of the 'rise of [the] bourgeoisie' and noted that the proportion of the total contribution from common users had increased after 2006, whereas the proportion of the total contribution from elite users had declined. More importantly, Niederer and van Dijck (2010:1372) argued that the increasing openness of Wikipedia to inexperienced users and the empowerment of the crowd were made possible by 'a sophisticated technomanagement system, which facilitates collaboration on various levels'.

Other investigations of user contributions have found that elite users have great influence over other users because of how ranking systems are designed. For example, users who visit a website without perfect information on the products or services are likely to follow previous users' online ratings and rankings; Duan et al. (2009) defined this process as an 'informational cascade'. As a result, products that receive higher rankings are more likely to be adopted by online users, creating a self-reinforcing loop.

Methods

Case Selection

To understand how the crowd and the few contribute to online engagement in the public sector, we apply Yin's case selection method and examine two critical and revelatory online public engagement cases (Yin 2014): Future Melbourne and Open Government Dialogue. As we focus on understanding patterns of online contribution to public policies by the crowd and the few, we select cases in which governments used online platforms to solicit public ideas for

formulating policies. More importantly, we aim to select cases that allow the aggregation of public ideas to influence final policies. The first example, Future Melbourne, allows participants to edit one another's contributions to the city's plan; the second, Open Government Dialogue, allows participants to vote for the best ideas for making government agencies more transparent. Both cases have attracted a large number of participants within a short period, which allows us to study the behaviours of participants with different contribution levels.

Future Melbourne

Background

Future Melbourne was initiated in early 2007 by the City of Melbourne; it was approved as the overarching structure for the Council Plan of the Melbourne City Council (Future Melbourne 2008). The Future Melbourne Plan is a 10-year strategic plan serving as the foundation for the Council Plan, which then serves as the basis for the city's branch business plans, individual performance plans, and annual budget (City of Melbourne 2009). The consultation process began in early 2007, and partners from the private and non-profit sectors were invited to participate through public forums, face-to-face meetings, and roundtable discussions. Towards the end of the consultation, the city government sought to expand the channels of collecting comments and feedback from the public and decided to adopt a wiki model.¹ Therefore, from 17 May 2008 through 15 June 2008, the Future Melbourne wiki (the online version of the plan) was opened for public participation and consultation. During this period, the public could read, edit, discuss, share, and contribute their ideas about the drafted plan (Future Melbourne 2008).

Engagement Process Designs

Membership to the wiki was free and open to the public worldwide, but the registration process required detailed information, including a participant's first name, last name, country, postal code (if applicable), and disclosure of any relationship to the City of Melbourne. The platform had clear rules and regulations on

what and *how* to discuss. Contributions from the crowd were selected through wiki editing. Contributors were advised to be civil. When differences among contributors arose regarding the use of the wiki, members could seek expert opinions by contacting the Future Melbourne team (Future Melbourne 2008).

Outcomes

In a comparison of pre- and post-editing Future Melbourne wiki plans, notable changes included the naming of strategic areas; additional research and references on debated areas; and more refined tables outlining the goals, indicators, and outcomes across all six strategies. For instance, the original plan contained only the descriptive outcomes and responsibilities for each strategy, whereas the edited wiki plan further included goals, measureable outcome indicators, and descriptions (Figure S1). Furthermore, the Future Melbourne city plan that has undergone public consultation and wiki editing received the Council endorsement in September 2009 and has been undergoing a process of implementation (Future Melbourne 2008). The endorsed Future Melbourne draft plan served as the backbone for the Council Plan for the City of Melbourne, which served as the purpose of the annual budget plan for 2013–2017 (City of Melbourne 2009). Future Melbourne incorporated a number of outcome indicators to measure the six strategic policy areas.² For instance, in the area of water efficiency, the plan provided detailed indicators, such as the reduction of water consumption by residents and by commercial workers by 40% and 50%, respectively, by 2020. Upcoming surveys and reports that measured the outcome indicators were also included in the reference section to enable citizens to follow up and see how the plans were implemented. In addition to the influences on policy making, the draft plan was said to greatly enhance social capital in city and regional planning through online platforms (Mandarano et al. 2010; Elliott 2006). Notably, the first plan also led to the second Future Melbourne 2026, beginning in 2016 (Future Melbourne 2016).

Open Government Dialogue

Background

President Obama issued a Memorandum on Transparency and Open Government on 21 January 2009 (The White House 2009). In response to this memorandum, Obama's chief technology officer recommended that the White House implement an Open Government Dialogue on May 21, together with the Office of Management and Budget and the General Services Administration (The White House 2009). The program initially consisted of three phases: brainstorming, discussing, and drafting the collaborative plan for the Open Government Directive (National Academy of Public Administration (NAPA) 2009). The Open Government Dialogue's online brainstorm session was open to the public from 21 to 28 May 2009; citizens could submit ideas, make comments, and vote for submitted ideas with respect to three policy goals that involved making the government more 'transparent,' 'participatory,' and 'collaborative' (The White House 2009). The most important themes and ideas that emerged from the first brainstorming session provided the basis for the two later phases of the Open Government Dialogue. This project was unconventional because it inverted the traditional consultation process and sought public ideas before creating the final policy (Bingham 2010).

Engagement Process Designs

To register as a member of the Open Government Dialogue page, a user was required to provide their real name, but members could choose whether they wanted to disclose their real identity to the public.³ All members also had member profiles, which included badges to indicate their status and activity streams outlining their activities. All registered members were able to vote, post, and comment on ideas. More importantly, to identify the most useful ideas, the platform adopted a rating system. Each entry was given a score by summing the totals for thumbs-up (+1) and for thumbs-down (-1). Entries with the highest scores were arranged at the top of the website, allowing officials to easily track suggestions.

Outcomes

Ideas and discussions generated from the Open Government Dialogue subsequently formed the basis for the Open Government Policy launched in 2009. Approximately 501 ideas generated in the first phase were incorporated into the second phase of the Open Government Dialogue, which lasted from 3 to 26 June 2009, and were channelled into the third phase of the Open Government Initiative, which lasted from June 22 to 6 July 2009. The net result was the Open Government Directive, which was announced on 8 December 2009. Following the Open Government initiative, the U.S. government has implemented a series of new initiatives, such as WhiteHouse.gov, data.gov, and Challenge.gov. The initiative has also become a global movement and an international initiative known as the Open Government Partnership.

Data Collection

To systematically explore the two cases, this study collected multiple sources of information, including government reports, interviews, websites, and behavioural data, to cross-examine this information and ensure the validity of our two cases (Yin 2014). Two panel datasets were generated from the Future Melbourne wiki and the Open Government Dialogue Phase I⁴ website. We tracked data until all contribution activities ceased, as large amounts of idea submission, voting, commenting, editing, or discussion activity⁵ were recorded after the deadline for consultation. Therefore, for the Future Melbourne project, we tracked the project for a year rather than only a month, as the Future Melbourne administration team continued to work on the plan after the public consultation period. For the Open Government Dialogue project, we tracked for a total of 2 months rather than only a week.

Analytical Approach

Because little is known about the relative distribution of contributions from the crowd and the few in the public consultation setting, this

study's approach to data analysis is exploratory. The method of analysis draws mainly on the work of Kittur et al. (2007), whose analysis examined the distribution of work on Wikipedia over time. Kittur et al. focused on two groups of participants: elites and crowds. They defined the elites by either status (such as a position) or level of participation. Kittur et al. (2007) presented a clear method to distinguish different levels of contribution.

This study calculates each group's total and percentage contribution for each day considered in the analysis. We empirically examine the participants' contribution levels and associated behaviours over time to inform the discussion of the few versus the crowd in the online public consultation process. We examine two levels of contributions within the studied observation periods: those made by a one-time contributor and those made by a repeat contributor.⁶ However, our analysis is limited by the amount of information publicly available. In the Future Melbourne case, we examine two different statuses, government and crowd, because of the availability of information about the contributors' government affiliation. In the Open Government Dialogue, we further examine three different activities: contributing ideas, commenting, and voting. We determine whether different types of contributors focus on specific topics in either case. We also seek to determine whether repeat contributors create a majority of the content throughout the entire consultation process or for only part of the process. Finally, we aim to investigate whether the repeat contributors remain the same throughout the consultation.

Results and Discussion

Future Melbourne

Future Melbourne was open from 17 May to 15 June 2008, for the public to contribute edits to Melbourne's strategic plan. During the public consultation period, there were approximately 30000 page views and 7000 unique visitors, 131 of whom contributed to several hundred edits. Our study tracked contribution

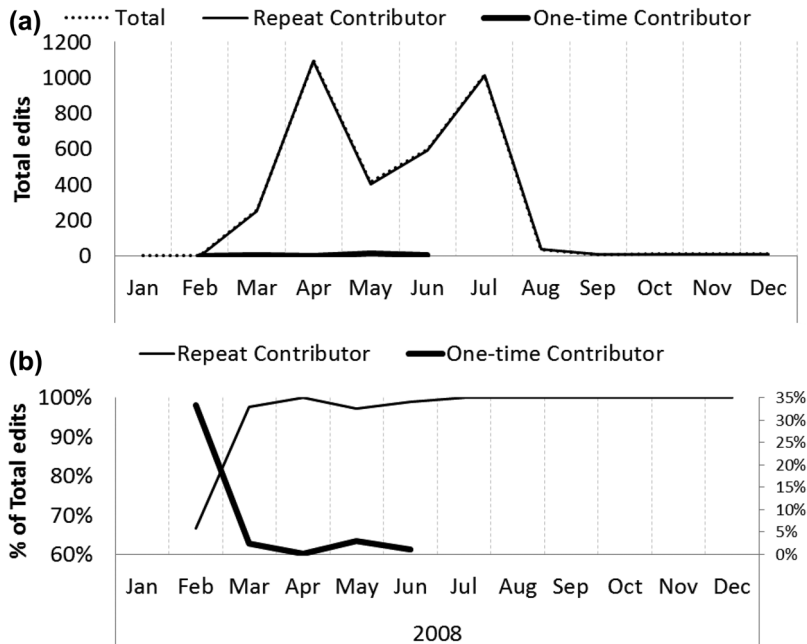
data for this platform for one year because a large amount of editing and discussion activity occurred before and after the official consultation and those numbers were counted as the final statistics in the official report and on the website. From the dataset available on wiki website, we recorded 86 total contributors who have contributed to the wiki editing, with 60 repeat contributors and 26 one-time contributors. Among the repeated contributors, the top 17 contributors, who accounted for 20% of all total contributors, contributed nearly 90% of the content in 2008.

Figure 1a shows the raw number of edits made by both repeat and one-time contributors, which defines their contribution levels. Figure 1b shows the percentages of edits made by the two different types of contributors. The repeat contributors contributed nearly 100% of the wiki content after March, including during the official consultation period from mid-May to mid-June. The official consultation period featured little increase in the content produced by one-time contributors.

The Future Melbourne website requires participants to indicate their relationship to the city government to avoid conflicts of interest. Thus, we can identify the contributions of government officials and others after February 2008. Figure 2a shows the raw number of edits made by each group per month. The figure shows that the number of edits made by government officials increased faster than the edits made by non-government contributors during March and April 2008. Figure 2b shows the percentages of edits made by the government and non-government contributors each month. Apart from the month of February, the percentage of government officials' contributions increased throughout the entire period, with the exception of a small decrease during the month of September 2008. During the official public consultation period, government officials' edits amounted to approximately 80% of the entire wiki content.

Through adaptation of the wiki technology, wiki editing and discussion clearly led to several changes during the drafting of the plan. For example, one member who identified himself as a researcher interested in

Figure 1. Number (a) and Percentage (b) of Edits per Month Made by Repeat Contributors (Solid Line) and One-time Contributors (Bold Solid Line) to the Future Melbourne Wiki.



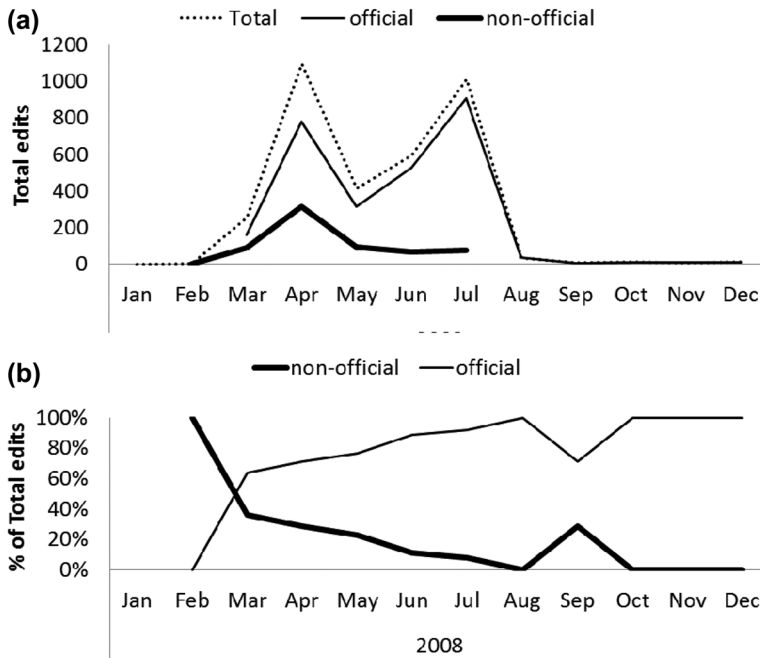
nanotechnology's impact recommended the use of new technologies, such as nanotechnology-enhanced solar photovoltaic power, to achieve zero net carbon emissions in Docklands. His post stimulated considerable discussion and, eventually, edits to the drafted plan, which now states that 'existing houses and apartments will be retrofitted' and 'usage of public transport will be encouraged to reduce gas emissions,' as indicated by the government post-implementation report online (City of Melbourne 2009).

Furthermore, one can observe how discussions on Future Melbourne were adopted for the final official city plan. For instance, members argued for the inclusion of carpooling in the plan, increased use of public transportation and new technologies, accessible transportation for residents and visitors, and more frequent transportation service for commuters (Future Melbourne 2008). All of the aspects mentioned above were included as targets in the plan; the city's goals including having 'effective and integrated public transport' and 'regional and global transport connections' as part of its

vision to be a Connected City (City of Melbourne 2009). For instance, ideas based on various outcome indicators, such as increasing the percentage of people who use public transport, cycle, or walk to work from 72% to 90% by 2020, were developed for the city to implement (Future Melbourne 2008).

In total, Future Melbourne participants contributed 3459 edits, and 91% of the wiki content was submitted by only 20% of the contributors. Furthermore, 29 of the repeat contributors were government officials or contractors with the City of Melbourne, and contributed approximately 80% of the content throughout the consultation period. The initiative received praise because these government contributors also spent time discussing and communicating with other contributors on the platform. Requiring disclosure of a relationship with the City of Melbourne also helped to establish the accountability of the contributors and the platform. In addition to holding contributors accountable for their edits and opinions, City of Melbourne government officials provided timely responses that enhanced communication among

Figure 2. Number (a) and Percentage (b) of Edits per Month Made by Government Officials (Solid Line) and Non-official Contributors (Bold Solid Line) to the Future Melbourne Wiki.



contributors and resolved conflicting views, as observed in a discussion of CO₂ emissions levels.

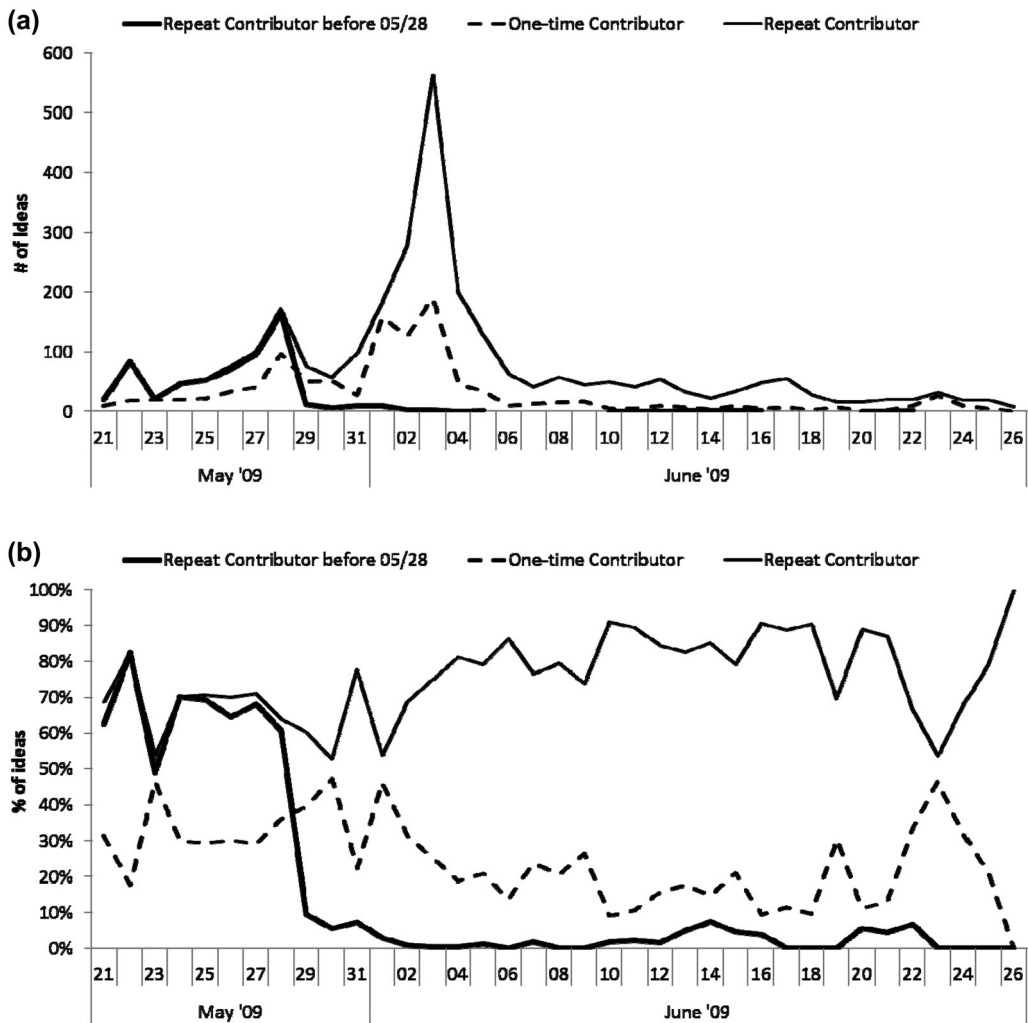
Open Government Dialogue

In Open Government Dialogue, 4205 ideas emerged during the week-long brainstorming session. The Open Government Dialogue drew considerable attention from the public, with 30822 visits from 20830 unique visitors (NAPA 2009). From our dataset, we recorded 1686 total contributors, with 570 repeat contributors and 1116 one-time contributors. The repeat contributors⁷ thus represented 34% of the total participants for the year of data tracked in this study. On average, the repeat contributors made 5.06 edits during the observation period; one participant made 100 contributions.

Figure 3a shows that the major peak in idea submission from active contributors occurred after the official public consultation period. Overall, repeat contributors' ideas constitute 72% of the total contributions. Furthermore,

the number of ideas submitted by each group generally increased over time, and this number is characterized by two distinct peaks, one during the consultation period (before 29 May) and one after the official period had closed. More importantly, our trend analysis reveals two groups of repeat contributors, based on analysis of each contributor's unique ID.⁸ One group of repeat contributors posted ideas during the consultation period, from 21 to 28 May, and this group's contributions decreased dramatically after 29 May. However, a new group of repeat contributors entered the community and made substantial contributions from 29 May to 6 June (i.e. the second peak). Figure 3b shows the percentage of ideas made by contributors with different levels of contributions. Similarly, for repeat contributors who contributed during the consultation period, we observe a consistent contribution before 29 May followed by a rapid decrease. For the second group, we observe a sharp increase after the official public consultation; this group eventually represented nearly 90% of the total

Figure 3. Number (a) and Percentage (b) of Ideas per Day Made by Repeat Contributors Before 28 May (Bold Solid Line), One-time Contributors (Dash Line), and Repeat Contributors (Solid Line) to the Open Government Dialogue.

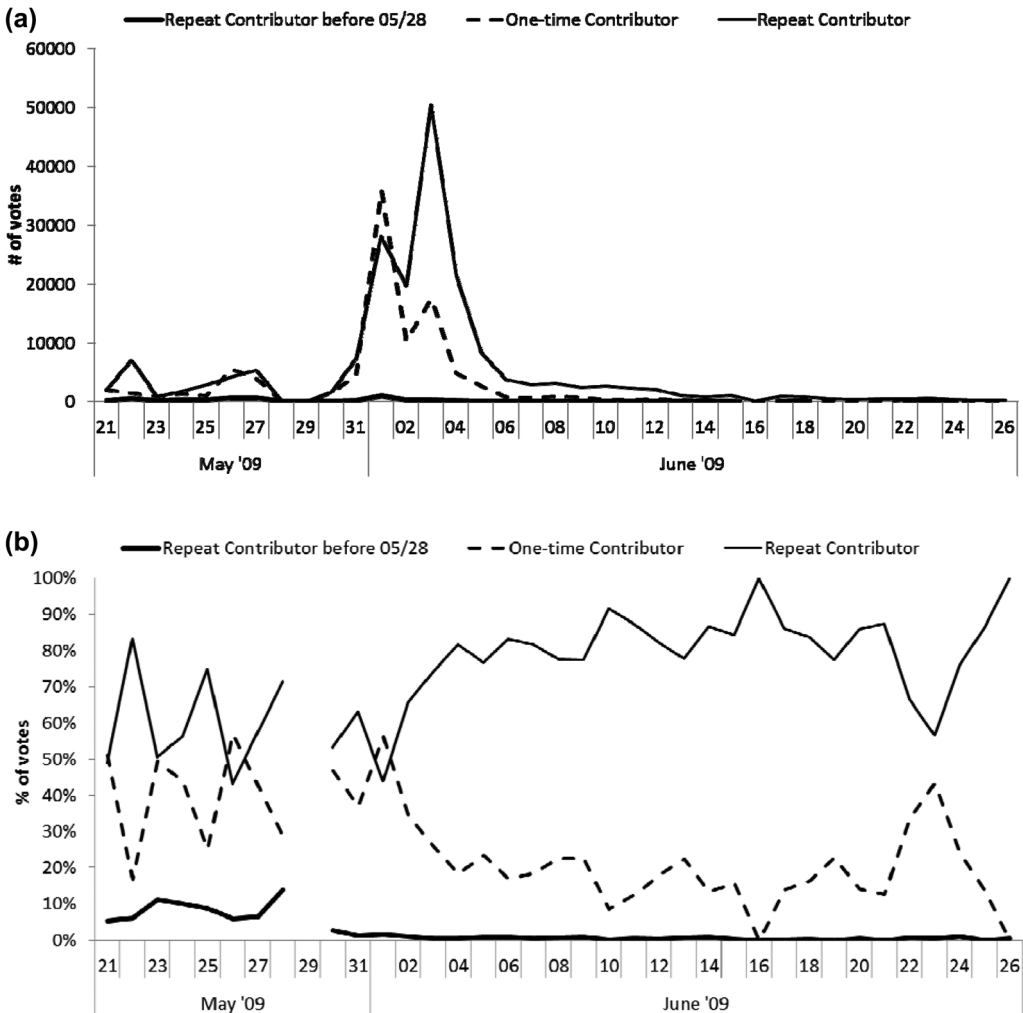


contributions during the observation period. Because of the popularity of the Open Government Dialogue initiative, some political interest groups used the same online platform to promote their own political agenda that differed from the Open Government Policy (FCW 2009).

We discuss the association between idea contribution and other activities associated with the Open Government Dialogue. Figure 4a shows the raw number of votes made by contributors with different levels of contribution. Two

peaks of voting activities occurred after the official public consultation period, and both were influenced by repeat contributors. The percentages in Figure 4b show that before May 28, the votes of the repeat contributors constituted only approximately 10% of the total votes. After the consultation period, the repeat contributors accounted for 50% to 80% of the votes, sometimes reaching nearly 100% of the total votes. The comment data also clearly show a contributing pattern similar to that for voting activities, and a subset of repeat contributors

Figure 4. Number (a) and Percentage (b) of Votes per Day Made by Repeat Contributors Before 28 May (Bold Solid Line), One-time Contributors (Dash Line), and Repeat Contributors (Solid Line) to the Open Government Dialogue.



was active in both commenting and contributing ideas (tables are available upon request).

In total, participants contributed 4001 ideas,⁹ 25193 comments, and 286286 votes; 34% of the total participants contributed 73% of the ideas in the Open Government Dialogue brainstorming session. Furthermore, we find that the first group that contributed to the platform (during the official consultation period) supplied a greater percentage of relevant ideas and that the second group supplied a greater percentage of irrelevant ideas. The results of the Open Gov-

ernment Dialogue brainstorming session were mixed. The summary report suggests that the project was successful in terms of generating awareness among the US populace (Open Government Dialogue 2009). However, the site received criticism because the top contributions on the Open Government Dialogue front page were not applicable to Open Government Policy goals, especially when data after 2009 June were included (Koniczczka 2010).

Moreover, as discussed earlier, participants may have more difficulty focusing attention on

the original policy goal (i.e. making the government more transparent) when using an open communication channel with diverse opinions (Lippmann 1922; Malin 2011). The rating system adopted by the Open Government Dialogue was intended to help participants focus on important and specific issues by allowing them to vote for the best ideas. However, the rating system only calculated the rate of activity without evaluating the relevance of that activity; the site eventually began to feature controversial issues, such as President Obama's birth location and marijuana legalization, rather than issues related to the intended policy goals of transparency, participation, and collaboration.

Limitations of the Study

This study explores online contribution behaviours in public policies, but it cannot generalize its claims because it is based on only two empirical cases. Notably, although our data provide valuable information on contributor behaviours, these data have limitations.

Because both sites had limited registration information and identity verification, we cannot accurately identify unique contributors (i.e. contributors can create multiple user names). However, if some users contribute under multiple user names, this would only reinforce our finding that the few had generated a disproportionately high number of ideas or edits. Furthermore, our current analysis does not indicate the content of the contribution and does not thoroughly explore differences in the nature of the contributions of one-time contributors (non-government officials) versus repeat contributors (or government officials). Such a distinction is important because the large number of contribution from government officials could be related to the management and maintenance of the website. Future research should adopt content analysis to explore the impacts of contributions by participants with different types of contributing behaviours.

Additionally, the time frame of our data collection may influence the concentration of contributions. For instance, some citizens may have

had more to say during the data collection period, and once their concerns were addressed by the government, they may have become less active. By contrast, other online participants may have become more engaged over time. In this case, the concentration of contributions could become substantially lower if one explores data over a longer time frame. We can address the time frame issue in two ways. First, we could examine a shorter period by including only the actual period of consultation. We find that in this shorter time frame, the distribution results for the crowd and the few remain similar. Second, future studies could examine cases with consultation periods of different duration. However, the trend analysis cannot provide information and assessment to determine whether some contributions are less impactful. Future studies could consider further analysis of the content in relation to the timing of posts.

Conclusions and Recommendations

Building upon three streams of literature, this study explored the contribution patterns of the crowd and the few on public consultation platforms. Both Future Melbourne and the Open Government Dialogue demonstrated that large crowds could be engaged in online consultations over a short period. Official reports viewed both consultation platforms as successful because they generated a great deal of ideas and interest from citizens and substantially influenced policy outcomes. Even with this perceived success, when further exploring the concentration of contributions in these two cases, this study illustrated that the online contributions reflected a relatively small percentage of citizens who were actively involved, despite the platforms' crowd-based designs. The discussion between Lippmann (1922) and Dewey (1927) continues to be relevant to today's society despite the advance in Internet communication technologies and online platforms. Our literature review suggests that the government should continue to empower citizens by building their capacity to participate, removing barriers to be more inclusive, and improving the decision-making process through

well-designed system to continue to strengthen the effectiveness of citizen contributions, as technology itself cannot empower the people or make the process more inclusive.

Our study preferentially captured the behaviour of more active Internet users and more politically savvy people rather than average citizens. Learning from the behaviours of contributors on the studied online platforms, our study offers several recommendations for the future of online public engagement in public policy issues. First, governments should consider making online deliberation more transparent and informative for citizens by disclosing how citizens' inputs will be incorporated into the policy. Prior to the start of a consultation period, the government should also clearly state how citizens' contributions will be selected and implemented. For instance, Future Melbourne declared on its front page that the online strategic city plan edited through the wiki would be the final version submitted to the Council in Melbourne for approval. Furthermore, governments can take another step by announcing whether the ideas contributed by the public are implemented. As an example in the private sector, Dell IdeaStorm, an idea forum for improving Dell's products and services, could regularly update participants about which ideas have been implemented after online users' voting and the company's internal review. Although making participation procedures more transparent and clear to contributors might not directly change contribution patterns, this approach would help contributors to make informed decisions about their future contributions and would ideally increase the quality of contribution, as found in a previous study in the private sector (Bayus 2013).

Second, making contributors' backgrounds, positions, and political/ideological belief systems transparent would ensure that participants are well informed, which is important for effective deliberation (Carpini et al. 2004; Lampe et al. 2014). In the Future Melbourne case, to avoid conflicts of interest, the participants disclosed their relationships with the City of Melbourne when applicable; these included contractors, consultants, and employees. For

policy idea forums, it might be helpful to give participants an option to disclose a political background, such as 'liberal' or 'conservative' (Lampe et al. 2014).

Third, our results show that repeat contributors not only contributed ideas frequently to increase their visibility but also actively used the Internet as a tool to gain public attention through self-commenting and voting. To prevent people from abusing voting systems, governments can consider designing their systems to allow each participant to have one vote or to restrict voting for oneself.

Fourth, rating systems are adapted to sort and select information to inform public decisions. However, the existing system often reinforces popular information instead of the most useful and relevant posts because the host institutions use vote quantity and rank participants based on their activity level rather than on the relevance of their ideas. A sophisticated techno-management system should be in place to monitor the quality and accuracy of content (Niederer and van Dijck 2010). Governments can consider adopting a more refined idea classification or labelling system to sort different types of ideas.

Future research is needed to examine whether the power of the few remains dominant in the public consultation process and in calls for innovation. The current open government movement and online platform technology allow us to track the behaviour of public participants and the process of idea generation. This study serves as an empirical strategy and model for government managers and scholars to further explore online behaviours in the policy consultation setting. Accordingly, we propose using more datasets that are available in the public domain to understand how different contributors' behaviours lead to the pattern of contributions shown in our study. We remain hopeful that this new form of participation could serve as an important supplement to the existing citizen engagement channels (Hong 2015; Roberts 2008; Urbinati and Warren 2008), especially with well-designed mechanisms and incentives to facilitate appropriate contributions of meaning, knowledge, and opinions.

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Conflict of Interest

This is an independent research project. I have no conflict of interest.

Endnotes

1. This information was obtained from an interview with Future Melbourne's strategic manager.
2. The government report (City of Melbourne 2009) listed suggestions from Future Melbourne that were considered by the City of Melbourne as well as other suggestions that would be considered together with the state government or other institutions because the ideas could not be implemented by the city alone.
3. Initially, individuals did not need to log in to submit ideas. However, a change was subsequently introduced on 23 May 2009 in response to concerns that anonymous posting would allow members to vote more than once on the same idea (Ginsberg 2011).
4. We use only Phase I data because information on individuals' engagement activity during Phases II and III is not publicly available.
5. These high-level activities are not necessarily relevant to the policy, but some were featured on the front page of the Open Government Dialogue website. We thus include them in our analysis.
6. Visitors are excluded in our analysis, as we seek to measure the distribution of contributions.
7. In our analysis, the number of ideas (3982) is 222 less than the announced total of 4205 submitted ideas because unknown users were

not included in this analysis; the site's administrators allowed users to register anonymously on the first day before changing the policy.

8. Because the Open Government Dialogue did not require contributors to register with their real names or to provide any formal ID, we cannot verify whether some of the contributors were the same person using more than one user name.

9. In the analysis of the Open Government Dialogue, ideas sharing the same name are treated as separate ideas because each idea generated different comments and discussions. The analysis shows that 116 posts shared the same idea names; these were posted by 62 contributors. The extreme case included one contributor who posted the same idea 16 times: 'Birth Certificate'.

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

Figure S1: Future Melbourne Wiki editing before (version 17) and after the consultation (final version): example on water consumption strategy (Future Melbourne 2008).